

New or Noteworthy Orchids

BY

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IN this paper orchids from the Philippine Islands and from North and Central America receive attention. Among them are many that I have been unable to refer to species heretofore described. The arrangement of the genera follows closely the sequence adopted in Engler and Prantl's "Die natürlichen Pflanzenfamilien."

For an opportunity to examine some recently described species supposedly of Philippine origin I am indebted to Dr. Fritz Kränzlin, who kindly loaned to me his type specimens prepared from plants cultivated in the botanic garden of München-Nymphenburg.

Habenaria alata Hook. Exot. Flora 3 (1826) t. 169.

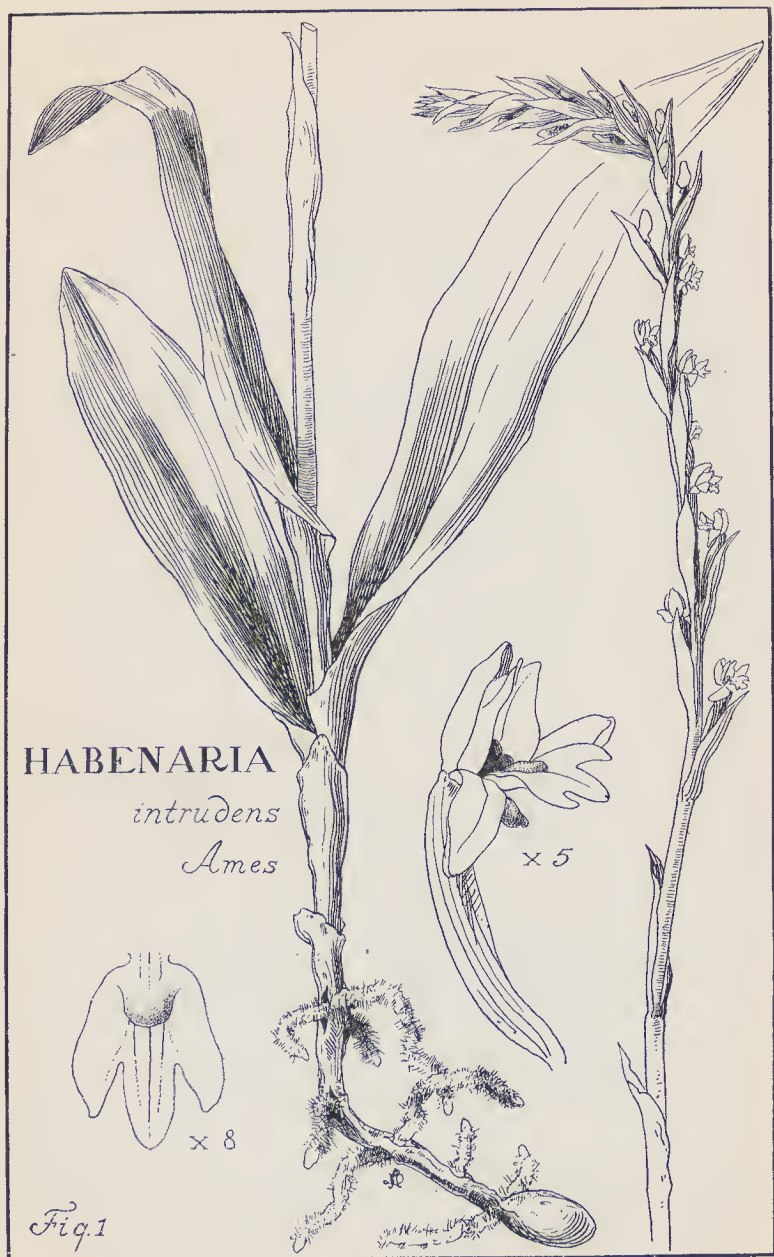
Specimens recently collected by C. W. Powell extend the range of this species to Panama. Heretofore it has only been known to be a native of Mexico, Guatemala, Costa Rica and Nicaragua among the republics of North and Central America.

PANAMA, "Ana lago," C. W. Powell 316. In open places in sunlight. Flowers pale green. Sea-level. McComber hill near Corazal: Powell 317, 318. Sea-level. Flowers in July.

Habenaria intrudens Ames sp. nov.

Habenaria lacertifera Ames Orch. 2 (1908) 39, non Benth.

Herba terrestris, tenera, caudice subterraneo simplici caule continuo perpendiculari in fibras laterales diviso imbricatis tuberi carnosio subgloboso enato. Radices villosae. Caules



infra folia conferta abbreviati. Folia oblongo-lanceolata, acuta, membranacea, sessilia, plus minusve tria. Pedunculus vel pars caulis supra folios valde elongatus, foliolis deerescentibus instructus, in racemum strictum terminans. Racemus multiflorus, nonnihil secundiflorus. Bracteae inflorescentiae flores aequantes. Flores albidii. Sepala lateralialia oblonga, obtusa, uninervia, plus minusve carnosae. Sepalum dorsale simile, valde concavum. Petala ovata vel anguste ovata, obtusa, uninervia. Labellum variabile, supra medium trilobatum; lobis lateralibus lobo medio minoribus. Discus callo magno infra medium ornatus. Calcar labelli abbreviatum, quam limbus labelli multo brevius. Columna abbreviata.

A slender herb up to 39 cm. tall (when measured to the tip of the slender raceme), arising from a small ellipsoidal tuber. Subterranean part of the stem clothed with several dilated sheaths through which the villous roots break forth. Leaves usually three, clustered near the ground, 8–12 cm. long, up to 2 cm. wide, oblong-lanceolate, acute, membranaceous when dry. Peduncle 12.5–32 cm. long, sparsely or closely beset with foliar bracts which are 1.5–4 cm. long. Pedicel with the ovary about 12 mm. long. Raceme 8–15 cm. long, less than 1 cm. in diameter, bearing from ten to twenty or more small white flowers. Bracts of the raceme about 12 mm. long, linear-lanceolate, acute, equaling or slightly exceeding the flowers. Lateral sepals 3.5–4 mm. long, about 1 mm. wide near the middle, oblong, obtuse, 1-nerved. Dorsal sepal similar, strongly concave. Petals 3 mm. long, 1.5 mm. wide near the middle, ovate or narrowly ovate, obtuse, 1-nerved. Labellum 3 mm. long, fleshy, 3-lobed above the middle, the lobes more or less porrect; lateral lobes smaller than the middle one, .75 mm. long to the sinus formed with the middle lobe, .5 mm. wide, triangular, obtuse; middle lobe 1 mm. long, .75 mm. wide, tapering gradually to a blunt tip; base of the labellum cuneate with a large callus on the disc. Column 1.25 mm. long. Spur 1.5 mm. long.

To this species I refer the specimens from the Philippines that I previously identified as *Habenaria lacertifera* (Lindl.)



Benth. The labellum is very different from the labellum of typical *H. lacertifera* as the lateral lobes are shorter and smaller than the middle lobe (sometimes much shorter). Unless *H. lacertifera* is a much more variable species than we now know it to be, it would be unwise to merge the Philippine ally with it. In my studies of specimens of *H. intrudens* from Rizal Province I have found that the lateral lobes are sometimes relatively shorter when contrasted with the middle lobe than the above description of the type indicates. In *H. lacertifera* the lateral lobes of the labellum are normally much longer than the middle one, often filiform. [Fig. 1.]

PHILIPPINES, Luzon, Rizal Province, Antipolo, M. Ramos, Bureau of Science 21999, October 1913. Flowers white. In thick forest. 100 meters altitude. (TYPE in Herb. Ames No. 15455): Luzon, Bulacan Province, Angat, M. Ramos, Bureau of Science 21706, September 27, 1913. Flowers white. 90 meters altitude: Luzon, Benguet Province, Baguio, H. M. Curran, Forestry Bureau 5085, August 24, 1906. Flowers white. Pine woods, ridges: R. S. Williams 1933, October 6, 1904. Flowers white.

Isotria verticillata (Willd.) Raf. in Med. Repos. N. Y. 5 (1808) 357.

The accompanying figure represents a two-flowered specimen of the species in which fasciation has taken place. The pedicels of the flowers and the basal portion of the ovaries have become united. My records do not show that a similar type of fasciation has been reported for *Isotria verticillata*. [Fig. 2.]

MASSACHUSETTS, North Easton, H. Walter Child & Oakes Ames. May 29, 1923.

Galeola philippinensis Ames sp. nov. Herba scandens, verisimiliter aphylla. Caules validi, nodis radicantibus. Inflorescentia ampla, bracteis foliosis ramos subtendentibus. Sepala lateralia carnea, concava, supra medium dilatata, obtusa vel subacuta. Sepalum dorsale oblongum, utrinque attenuatum, apice cucullatum, sep-

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temnervium. Petala oblonga, subspathulata, quinquenervia, apice angustata. Labellum simplex, supra basim in laminam ellipticam emarginatam concavam expansum, nervis conspicue papillois, usque ad apicem carinatum. Columna elongata, superne dilatata.

A scandent herb rooting at the nodes of the more or less rigid leafless stems. Inflorescence much branched, paniculiform, many-flowered. Flower-bearing branches 4-5 cm. long. Flowers quaquaversal on thickened axes. Floral-axis, or that part of the much-branched inflorescence which bears the flowers, 2-3 cm. long, up to 3 mm. thick, smooth, ten or more flowered, rigid. Bracts that subtend each floral branch foliaceous, 3 cm. or more long. Lateral sepals 1.7 cm. long, about 5 mm. wide above the middle, oblong, dilated gradually toward the apex, strongly concave, somewhat cucullate at the tip, fleshy. Dorsal sepal about 1.5 cm. long, 4 mm. wide near the middle, oblong, slightly narrowed toward the base, 7-nerved, apex cucullate. Petals 1.9 cm. long, 3 mm. wide near the middle, oblong, somewhat dilated upward, 5-nerved. Labellum 1.5 cm. long, simple, about 8 mm. wide above the middle, more or less elliptical in outline with a deeply emarginate apex, the basal margin adherent to the base of the slender column, upper surface (chiefly along the veins) studded with erect papillose emergences. Disc with a thin dorso-ventrally flattened lamella which extends from the base of the column for two thirds of the length of the labellum and then becomes abruptly narrowed into a raised laterally compressed keel which extends to the tip of the labellum. Column 1 cm. long, slender, suddenly dilated near the tip. Capsules fusiform 8-13 cm. long.

In habit *Galeola philippinensis* resembles *G. altissima* Reichb. f., but has larger and very different flowers. The structure of the labellum suggests the Australian *G. Ledgeri* F. v. Muell.

PHILIPPINES, Luzon, Sorsogon Province, Irosin, Mount Bulusan, A. D. E. Elmer 16122. May 1916. (TYPE in Herb. Ames No. 16070.)

Aphyllorchis halconensis Ames *sp. nov.* Herba aphylla, vaginis amplis instructa. Racemus laxiflorus, bracteis flores subtendentibus elongatis, anguste lanceolatis, ovarium aequantibus vel superantibus. Ovarium glandulosum. Sepala lateralialia oblongo-lanceolata, acuta, prope apicem plus minusve carinata, extus sparse glandulosa. Sepalum dorsale subsimile, valde concavum, extus sparse glandulosum. Petala oblongo-lanceolata, leviter curvata, extus per medium leviter carinata, acuta. Labellum trilobatum, sepala lateralialia vix aequans; lobis lateralibus late triangularibus, quam lobo medio multo minoribus; lobo medio lanceolato, subtus valde carinato, margine irregulariter crenulato. Discus inter lobos laterales incrassatus, prope basim lobi medii bicarinatus, carinis plus minusve crenulatis. Columna elongata, curvata, superne dilatata.

A leafless herb 11.5 dm. tall, stems clothed at intervals with loose tubular sheaths, those near the base of the plant closer together than those near the summit. Sheaths .5-3 cm. long, the upper ones longest about 10 cm. apart, the lowermost ones shortest about 1.5 cm. apart. Raceme 10 cm. long, loosely flowered. Floral bracts 1.5-2 cm. long, 3 mm. wide, linear-lanceolate, equaling or slightly exceeding the pedicellate ovary, spreading or slightly deflexed. Pedicel with the ovary up to 23 mm. long, densely glandular-pubescent, obliquely ascending. Lateral sepals about 1.3 cm. long, 3.5 mm. wide, oblong-lanceolate, acute, becoming strongly carinate on the outer surface toward the tip, sparsely glandulose. Dorsal sepal 1.5 cm. long, strongly concave, arching forward over the slender column. Petals 1.5 cm. long, about 3.5 mm. wide above the middle, more delicate in texture than the sepals, oblong-lanceolate, acute, lightly carinate on the outer surface, with one central branching nerve. Labellum 1.3 cm. long, unequally 3-lobed; lateral lobes basal, 2.5 mm. long to the sinus formed with the middle lobe, triangular, subacute; middle lobe 1 cm. long, about 5 mm. wide below the middle, lanceolate, deeply carinate at the cymbiform tip. Disc thickened between the lateral lobes, bicarinate at the base of the middle lobe, the

keels somewhat erenulate. Column 9 mm. long, slender, curved forward, dilated upward.

PHILIPPINES, Mindoro, Calapan Province, Mount Halcon, *M. Ramos & G. Edano s. n.*, March 16, 1922. Terrestrial. Flower bluish purple and white. 3000 feet altitude. (TYPE in Herb. Ames No. 26234.)

Stenorrhynchus orchoides (*Sw.*) *L. C. Rich.* De Orch. Europ. Annot. (1817) 37 et in Mem. Mus. Par. 4 (1818) 59.

Among specimens recently collected in Panama this common tropical American species is represented. *Stenorrhynchus* is an addition to the genera known to occur in Panama.

PANAMA, Savannas near Pacora, *C. W. Powell 300*, May 1923. Terrestrial. Grows in full sun. Flowers green and white. Sea-level.

Erythrodos Boettcheri *Ames sp. nov.* Herba ter-
restris, erecta, e rhizomate subterraneo. Caules foliosi,
foliis prope basim plantae confertis, supra medium albido-
glandulosi. Folia ovata, basi rotundata, apice acuta, in
petiolum contracta, petiolis basi caulem breviter vaginan-
tibus. Bractae caulinae ascendentes, alternae. Racemus
laxiflorus. Bractae racemi anguste lanecolatae, ovarium
aequantur vel breviter superantes, extus glandulosae. Sepala
lateralia lanceolata, obtusa, apice leviter cucullata, extus
sparse glandulosa, nervo medio prominenti. Sepalum dor-
sale simile, valde concavum. Petala spathulata, obtusa,
glabra. Labellum basi saccato-ventricosum, saeco bilobato,
supra basim marginibus involutis, parte terminali in laminam
suborbicularem expansa. Saccus glaber, quinquenervius.
Columna elongata.

Terrestrial herb up to 30 cm. tall, arising from a creep-
ing rhizome. Leaves more or less crowded near the base of
the plant, 2-6 cm. long, up to 2.7 cm. wide, ovate, rounded
at the base, acute, membranaceous, contracted into wide
petioles which sheath the stem. Leafless portion of the plant
16-24 cm. long, provided with closely appressed, ascending

bracts, covered with a whitish glandular pubescence above. Raceme up to 7 cm. long, loosely flowered, rachis pubescent. Floral bracts about equal to the shortly pedicellate ovary, lanceolate, glandulose. Ovary about 9 mm. long, densely glandular. Lateral sepals 6 mm. long, 2 mm. wide, lanceolate, obtuse, minutely cucullate at the tip, sparsely glandular on the outer surface, mid-nerve slightly prominent and conspicuous in dried specimens. Dorsal sepal 6 mm. long, similar to the laterals, strongly concave, arching forward over the column. Petals 6 mm. long, up to 1 mm. wide, spatulate, obtuse, with a conspicuous mid-nerve. Labellum 7 mm. long, ventricose-saccate at the base, with the sac distinctly bilobed, ecallose, 5-nerved, the lobes .75 mm. long, blunt, terminal part of the labellum expanded into a suborbicular lamina which is 2 mm. long and nearly 3 mm. wide. Column 4.5 mm. long.

A near ally of *E. Wenzelii* Ames and *E. Weberi* Ames, from which it differs in having the sac of the labellum ecallose (cf. Ames Orch. 7 (1922) 66).

PHILIPPINES, Luzon, Kalinga Province, Balbalan, *George Boettcher s. n.*, March 18. Flower reddish brown. 1000 meters altitude. (TYPE in Herb. Ames No. 26320.)

***Adenostylis philippinensis* Ames sp. nov.** Herba terrestris e rhizomate subterraneo, infra medium foliosa, foliis inter se satis distantibus. Folia bene-lanceolata, acuta, verisimiliter reticulato-nervosa, basi in petiolum contracta, petiolis basi caulem breviter vaginantibus. Caulis supra folia albido-glandulosus, bracteis ascendentibus infra medium tubulatis lanceolatis instructus. Racemus gracilis, multiflorus, floribus inter se satis distantibus. Sepala lateralialia lanceolata, acuminata, subacuta, extus longe et sparse glandulosa. Sepalum dorsale simile, valde fornicato-concavum, extus glandulosum. Petala sepalo dorsali agglutinata, lanceolata, obtusa, margine anteriore prope basim protuberanti. Labellum ventricosum-saccatum, antice in laminam subreniformem vel triangularem expansum, intus bicallosum, callis valde curvatis vel hamatis. Columna abbreviata.

Terrestrial herb 24–28 cm. tall, from a creeping rhizome. Plant leafy below the middle. Leaves about 1.5 cm. apart, alternate, 2.5–5.5 cm. long, up to 1.8 cm. wide below the middle, membranaceous, lanceolate, acute, contracted abruptly into a short petiole 1 cm. long, which at its base loosely sheaths the stem. Stem above the leaves sparsely covered with weak, whitish glandular hairs and provided with about four erect or ascending lanceolate bracts which are shortly tubular at the base. Raceme elongating during a long flowering period, 6–12 cm. long, flowers 3–6 mm. apart on the glandular rachis. Bracts of the inflorescence 7–10 mm. long, lanceolate, acuminate, sparsely glandular. Lateral sepals 3 mm. long, 1.5 mm. wide, lanceolate, sub-acute with a cucullate apex, sparsely glandular on the outer surface with the glands weak and elongated. Dorsal sepal similar to the laterals, strongly concave. Petals 3 mm. long, about 1 mm. wide, lanceolate, adherent to the upper sepal, the anterior margin protuberant near the base, mid-nerve conspicuous in dried specimens. Labellum 3 mm. long, ventricose-saccate, narrowed in front, the anterior wall densely glandular, apical portion expanded into a subreniform or triangular plate which is more or less acute, .5 mm. long, 1 mm. wide, minutely glandular; sac 1 mm. deep with a strongly curved or hamate appendage on each side within. Column 2.5 mm. long, stout, with the rostellum deeply excised, the rostellar arms distinctly spatulate.

Allied to *Adenostylis Elmeri* Ames.

PHILIPPINES, Leyte, C. A. Wenzel 0375, March 28, 1913. Terrestrial in forest, sepals green, petals white, leaf thin. 60 meters altitude. (TYPE in Herb. Ames No. 15305): Wenzel 0224, July 31, 1913. Terrestrial in forest. Flowers white. 60 meters altitude.

***Adenostylis zamboangensis* Ames sp. nov.** Rhizoma longe repens, ad nodos radicans. Radices crassae, villosae. Caulis ascendens, erectus, foliosus, foliis inter se satis distantibus, basi petioli caulem amplectentibus. Folium impariter lanceolatum, acuminatum, acutum, basi rotundatum in petiolum gracile contractum. Pedunculus vel pars

caulis aphylla gracilis, breviter albido-villosus, paucibracteatus. Racemus satis elongatus, sublaxiflorus. Bracteae inflorescentiae anguste lanceolatae, ovarium aequantes vel excedentes. Ovarium breviter glandulosum. Sepala lateralalia ovata, subobtusa, extus per medium leviter carinata, plus minusve concava, trinervia. Sepalum dorsale valde concavum, cum petalis galeam formans, extus per medium leviter carinatum et minute glandulosum. Petala impariter et late ovata, margine anteriore protuberantia, membranacea, nervo prope marginem posteriorem leviter prominenti. Labellum basi ventricosum, prope medium valde constrictum, deinde in laminam transversam expansum, intus prope sacci basim utrinque appendice carnosa ornatum. Columna abbreviata, rostello profunde exciso.

Terrestrial herb up to 30 cm. or more tall from an elongated, creeping rhizome. Roots about 3 cm. long arising from the nodes of the rhizome, villose, about 3 mm. in diameter. Nodes of the rhizome 3 cm. more or less apart. Stems succulent, ascending, erect, about 4 mm. thick, leafy. Leaves asymmetrically lanceolate, contracted into a slender petiole which at base forms a tubular sheath. Lamina of the leaf 5-6.5 cm. long, 2.4 cm. wide just below the middle, acuminate, acute, rounded at the base. Petioles including the sheathing base 2-2.2 cm. long, about 2 cm. apart on the stem. Peduncle or leafless part of the stem 15-16 cm. long, slender, covered with soft whitish hairs, few-bracteate, the bracts 1-12 mm. long, closely appressed, lanceolate, acute. Raceme about 5 cm. long, loosely flowered, the flowers opening in succession, greenish white, odorless. Bracts of the raceme 6 mm. long, equaling or exceeding the ovary, lanceolate, acuminate, acute. Ovary shortly pedicellate, 9 mm. long, glandular-pubescent. Lateral sepals 4.5 mm. long, 2.5 mm. wide, ovate, obtuse and slightly thickened at the tip, 3-nerved with the median nerve prominent on the outer surface. Dorsal sepal 4 mm. long, strongly concave, forming with the petals a deep hood, externally glandular-pubescent. Petals lightly adherent to the upper sepal, 4 mm. long, 2.75 mm. wide near the middle, unequally and broadly ovate, rounded on the anterior

margin, membranaceous, the nerve near the posterior margin somewhat prominent. Labellum 4 mm. long, with the terminal portion expanded into a transverse lamina which is 3-4 mm. wide; base of the labellum strongly ventricose-saccate, 2.5 mm. long, with a conspicuous hamate appendage within on either side of the prominent mid-nerve, constricted in front with each lateral margin convergent on the short isthmus which separates the sac from the terminal lamina; isthmus 1 mm. long; lamina narrowly subreniform, obscurely if at all apiculate in front. Column rather stout, with the rostellum deeply excised.

In habit and flower structure *A. zamboangensis* suggests *A. benguetensis* Ames, but is much larger in all of its parts.

PHILIPPINES, Mindanao, Zamboanga District, *E. B. Copeland* 1567, December 11, 1904. Terrestrial in forest. 400 feet altitude. (TYPE in Herb. Ames No. 7291.)

***Epipactis Elmeri* Ames sp. nov.** Herba pusilla, plus minusve quadrifoliata, foliis inter se satis distantibus. Rhizoma repens, ad nodos radicans. Folia bene reticulata, ovata, acuta, in petiolum contraeta. Caulis supra folios paucibracteatus. Racemus gracilis, plus minusve decemflorus, minute glandulosus. Bracteae inflorescentiae ovarium pedicellatum superantes, anguste triangulari-lanceolatae, glabrae. Ovarium glabrum vel inconspicue et sparse glandulosum. Flores glabri. Sepala lateralia ovata, obtusa, uninervia. Sepalum dorsale valde concavum, ellipticum, obtusum, uninervium. Petala sepalo dorsali adhaerentia, eum sepalo dorsali galeam formantia, subspathulata, obtusa, uninervia. Labellum valde saccatum, antice in laminam semiellipticam productum, intus longe glandulosum. Columna generis rostellum bicuspidato.

Rhizome creeping, about 2 mm. in diameter, rooting at the nodes. Stems 14-17 cm. long, minutely glandular above, leafy. Leaves 1.5-2 cm. apart, 1.5-4 cm. long, 9-20 mm. wide, ovate from a broad base, conspicuously reticulate-veined, acute, contracted at base into a slender petiole, the base of the petiole sheathing the stem. Between the uppermost leaf and the base of the raceme there are

Fig. 3

EPIPACTIS

Elmeri

Ames



several ascending bracts, 5–10 mm. long. Raceme slender, 3–4.5 cm. long, ten or more flowered, glandular-pubescent. Bracts of the inflorescence up to 7 mm. long, triangular-lanceolate, smooth, exceeding the shortly pedicellate ovary. Ovary smooth. Lateral sepals 2–3 mm. long, 1.25–2 mm. wide, ovate, obtuse, 1-nerved, smooth, concealing the saccate base of the labellum. Dorsal sepal about 2.5 mm. long, concave. Petals 2 mm. long, adhering lightly to the upper sepal, somewhat spatulate, obtuse, 1-nerved. Labellum 2.5 mm. long, strongly saccate, with several clavate glands within, produced in front into a more or less expanded lamina which is obtuse and semielliptical. Column about 2 mm. long, with the rostellum deeply and broadly excised.

Allied to *Epipactis Ramosii* Ames comb. nov. (*Good-dera Ramosii* Ames in Phil. Journ. Sci. 8 (1913) 409), but with smaller flowers and a different labellum. [Fig. 3.]

PHILIPPINES, Luzon, Sorsogon Province, Irosin, Mount Bulusan, A. D. E. Elmer 14884, November 1916. (TYPE in Herb. Ames No. 26302.)

Hetaeria leytenensis Ames sp. nov. Herba terrestris. Caulis herbaceus, simplex, ascendens, basi repens, inferne glaber, foliosus, superne breviter albido-villosus, foliis squamiformibus vaginantibus praeditus. Folia triangulari-lanceolata, acuminata, variegata, basi in petiolum abbreviatum canaliculatum ima vaginantem attenuata. Racemus erectus, plus minusve gracilis. Ovarium glandulosum. Sepala lateralibus ovato-lanceolata, subacuta. Sepalum dorsale basi valde concavum, supra medium triangulare, obtusum. Petala inaequaliter ovato-lanceolata, subacuta, sepalo dorsali adhaerentia. Labellum valde concavum vel ventricosum, basim versus cum tuberculis recurvis duobus instructum, supra medium utrinque incrassatum deinde valde constrictum, in apicem triangularem productum. Columna erecta, rostello valde bifido, utrinque stigmatifera. Anthera sagittata.

Terrestrial herb up to 20 cm. tall from a creeping rhizome. Roots 2–4 cm. long, hairy. Stems smooth below, leafy, pubescent above, with bract-like leaves which de-

crease in size. Leaves 5.5–7 cm. long, up to 2.2 cm. wide near the base, triangular-lanceolate, acuminate, with canaliculate petioles which sheath the stem. Leaf-like bracts 1–2 cm. long, closely appressed. Raceme 3–4 cm. or more long, slender. Bracts of the raceme equaling or exceeding the flowers. Ovary and abbreviated pedicel about 8 mm. long, glandular. Lateral sepals about 3 mm. long, ovate-lanceolate, subacute, membranaceous. Dorsal sepal about 3 mm. long, strongly concave at the base, somewhat ovate in outline when spread out, obtuse. Petals agglutinated to the dorsal sepal, 3 mm. long, 2 mm. wide below the middle, unequally ovate, acute or subacute. Labellum 3 mm. long, ventricose-saccate, with two hooked appendages within near the base, one on each side, thickened in front near the anterior margin of the sac where it is narrowed into an isthmus; apical portion of the labellum triangular, .75 mm. long and broad. Column about 2 mm. long with the rostellum deeply bifid. Anther sagittate.

Allied to *Hetaeria micrantha* Bl., from which it differs in the foliage, in the petals and in the shape of the labellum.

PHILIPPINES, Leyte, Mount Abucayan, G. Edaña, *Bureau of Science 42081b*, January 20, 1923. On stony slopes in forest. 900 feet altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26073.)

Myrmechis perpusilla Ames *sp. nov.* Herba perpusilla, foliosa, e rhizomate subterraneo. Folia alterna, petiolata, patentia, ovata, acuta, basi rotundata, superiora magis approximata, petiolis basi caulem breviter vaginantibus. Pedunculus terminalis, erectus, pubescens. Bractea solitaria, scariosa, margine glandulosa, ovarium ad basim cingens. Flores mediocres, verisimiliter albidi. Pedicellus sparse glandulosus. Sepala lateralia anguste ovato-lanceolata vel triangulari-lanceolata, obtusa, uninervia, basi ventricosa labellum inferne amplexentia eique subtus paulum adnata. Sepalum dorsale cum petalis agglutinatum, fornicato-ascendens. Petala rhombico-lanceolata, uninervia, obtusa. Labellum e basi serotiformi-inflata medio con-

strictum, apice in limbum brevem transverse dilatatum expansum. Saccus labelli glandulis duabus intus ornatus. Columna abbreviata.

A diminutive herb 3-6 cm. tall, from a slender creeping rhizome. Leaves alternate, 6-10 mm. long, 4-7.5 mm. wide, ovate, acute, contracted at base into a short petiole which sheaths the stem. Stems above the uppermost leaf glandular-pubescent. Flower terminal, subtended by a scarious, glandular bract which is subequal to the ovary. Pedicel slender, sparsely glandular, 6 mm. long (with the ovary). Lateral sepals, 6.5 mm. long, 2.5 mm. wide near the base, ovate-lanceolate or triangular-lanceolate, hardly acute, 1-nerved, membranaceous, ventricose at the base. Dorsal sepal 5.5 mm. long, subacute, ventricose at the base, 1-nerved. Petals lightly adherent to the dorsal sepal, about 5.5 mm. long, rhombic-lanceolate, about 2.5 mm. wide near the middle, membranaceous, 1-nerved. Labellum 6.5 mm. long, strongly ventricose at the base, constricted above the ventricose base into a narrow isthmus which is 3 mm. long with involute margins, then expanded transversely into an oblong limb which is 4.5 mm. wide and 1.5 mm. long; ventricose base 3 mm. long, 2 mm. deep, with a quadrate complanate gland on each side within. Column about 2.5 mm. long, with an elongated tooth-like process on each side below the stigmatic lobe.

A close ally of the Javan *Myrmechis gracilis* Bl., from which species it differs in the form of the petals and in having longer processes on the column.

PHILIPPINES, Luzon, Benguet Province, Pauai, E. B. Copeland 124, May 10, 1913. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26319.)

Tropidia Robinsonii Ames sp. nov. Herba terrestris, erecta, foliosa, nonnihil simplex, plerumque ramosa. Caules graciles, teretes, foliis in vaginis tubulosis nervosis sessilibus. Folia linearia, acuta, superiora plus minusve conferta, inferiora inter se satis distantia, alterna, graminca, oblique ascendentia, demum recurvata. Inflorescentia terminalis. Racemus parvus, e vaginis foliorum terminalium erumpens,

pauciflorus. Bracteae racemi plus minusve rigidae, basi concavae, ovario longiores, nervosae, virides, persistentes. Ovarium pedicellatum plus minusve sulcatum. Sepala lateralalia oblonga, usque ad apicem angustata, apice breviter carinata, basi cohaerentia, mentum breve obtusum formantia. Sepalum dorsale cymbiforme, sepalis lateralibus multo angustius. Petala triangulari-oblonga, usque ad apicem angustata, valde curvata. Labellum ventricososaccatum apice valde decurvatum. Columna generis.

Terrestrial herb 30 cm. or more tall, simple or commonly branching above, with the branches 10-16 cm. or more long. Stems terete, hardly 2 mm. thick, erect, leafy. Leaves 4-8 cm. long, 3-6 mm. wide, linear, grass-like, narrowed toward the ends, sessile on the tubular sheathing bases which conceal the stem. Racemes terminal from the axils of the uppermost leaves, with the abbreviated peduncle 1-1.5 cm. long, few-flowered, with the flowers crowded. Bracts of the raceme about 5 mm. long, rigid, persistent, triangular, concave, nervose. Ovary shortly pedicellate, about 4 mm. long, longitudinally sulcate. Lateral sepals 8 mm. long, 2 mm. wide, oblong, narrowed to a shortly carinate tip, united at base, forming a distinct obtuse mentum which conceals the base of the labellum. Dorsal sepal 8 mm. long, cymbiform, arching forward over the column, acute. Petals 7 mm. long, 2.5 mm. wide, triangular-falcate, acute, protuberant on the anterior margin at the base. Labellum including the strongly deflexed tip, 8 mm. long, ventricose-saccate, distinctly bilobed at the base, sulcate beneath where it is longitudinally thickened, with a prominent keel within near the base and with a distinct keel on each side above the middle; the deflexed apical portion is somewhat cucullate at the obtuse tip. Column about 4 mm. long.

Tropidia Robinsonii is distinguished from the closely allied *T. gracilis* Schltr. by its broad triangular floral bracts and large flowers.

PHILIPPINES, Luzon, Tayabas Province, Siniloan Trail, C. B. Robinson, Bureau of Science 9496, September 5, 1909. Flower white. (TYPE in Herb. Ames No. 26329.)

Coelogyne candoonensis Ames sp. nov. Radices fibratae. Rhizoma validum, plus minusve repens. Pseudobulbi in serie, approximati, anguste ampullacei, usque ad apicem attenuati, diphylli, in rhizomate crasso repenti congesti. Folia anguste elliptico-lanceolata, acuta, subtus prominenter quinquenervia, in petiolum sensim contracta. Pedunculus terminalis, folium multo superans, basi nudus, infra racemum valde bialatus, rachide fractiflexa. Bracteae inflorescentiae ovarium pedicellatum superantes, deciduae. Sepala lateralia oblonga, basi valde concava, sensim acuta. Sepalum dorsale simile sed valde concavum. Petala lineari-triangularia, acuta, trinervia. Labellum conspicue trilobatum; lobis lateralibus superne dilatatis, apice leviter emarginatis; lobo medio cuneato-obovato, abrupte triangulari-acuto, supra medium minute glanduloso. Discus callo alte sulcato ornatus. Columna valde arcuata, apicem versus alata, ala inconspicue undulata.

Roots 2 mm. in diameter, smooth. Rhizome 8–10 mm. thick, bearing the approximate pseudobulbs in linear series. Pseudobulbs 8–12 cm. long when mature, very slender, up to 1.5 cm. thick near the base, tapering gradually to the summit, diphyllous. Leaves 24 cm. long, up to 3.6 cm. wide above the middle, narrowly elliptic-lanceolate, acute, prominently 5-nerved beneath, contracted into a short sulcate petiole. Peduncle terminal, arising between the leaves, with the raceme 30 cm. long more or less, conspicuously bialate below the inflorescence, with the rachis conspicuously flexuose, elongating during anthesis. Bracts of the inflorescence deciduous, glumaceous, about 3 cm. long, yellowish, those at the tip of the elongating rachis closely imbricating. Pedicels 8–10 mm. long including the ovary. Lateral sepals about 1.4 cm. long, 4 mm. wide, oblong, acute, concave at the base. Dorsal sepal similar, about 1.5 cm. long, concave, arching forward over the column. Petals 13 mm. long, about 2 mm. wide near the base, linear-triangular, acute, tapering gradually to the tip, 3-nerved. Labellum conspicuously 3-lobed, 11.5 mm. long; lateral lobes 5 mm. long from tip to sinus formed with the middle lobe, 5 mm. wide at the tip, inner margin protuberant, apex

COELOGYNE *candoonensis*
Ames



Fig. 4

lightly emarginate, otherwise truncate, upper surface minutely and densely glandulose; middle lobe 9 mm. long, 6 mm. wide above the middle, obovate from a cuneate base, contracted at the tip in a triangular apicule, upper half minutely and very densely glandulose. Disc in front of the middle lobe provided with an erect more or less sulcate callus which is suborbicular when spread out with a central longitudinal keel. Column about 9 mm. long, areuate, conspicuously winged, the wing prominent behind the anther with the margin obscurely undulate.

Vegetatively similar to *Coelogyne longirachis* Ames, from which it differs in the details of the labellum, in the callus and in the wings of the column. [Fig. 4.]

PHILIPPINES, Mindanao, Bukidnon Subprovince, Mount Candoon, *M. Ramos & G. Edaño, Bureau of Science 38894*, July 8, 1920. On tree on mossy forest slopes. Flower brown and white. 5500 feet altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26323.)

***Coelogyne marmorata* Reichb. f.** in *Linnaea* 41 (1877) 116.

Coelogyne Zahlbrucknerae Kränzl. in *Fedde Repert.* 17 (1921) 389.

An examination of the type specimen of *Coelogyne Zahlbrucknerae* preserved in Kränzlin's herbarium indicates that it is conspecific with *C. marmorata* Reichb. f. In reducing *C. Zahlbrucknerae* to synonymy I have relied on a drawing preserved in my herbarium, which was made from Reichenbach's type preserved in Vienna.

Coelogyne Merrillii Ames is a close ally of *C. marmorata*, but differs from it in the contour of the labellum.

***Pholidota carnea* (Bl.) Lindl.** *Gen. & Spec. Orch.* (1830) 37.

Coelogyne carnea Reichb. f. in *Walp. Ann.* 6 (1861) 237.

Crinonia carnea Bl. *Bijdr.* (1825) 339.

Crinonia Elmeri Ames *Orch.* 5 (1915) 67 *nomen*.

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, *A. D. E. Elmer 13834*, September

1912. Somewhat creeping clusters along the nether side of moss-covered tree trunks on a wind-swept ridge of Masoy at 5500 feet; stems few, bendable, descending and eurved upwardly, occasionally short branched, covered by imbricate dry braets; pseudobulbs ascending, reddish-tinged on the upper or exposed side; leaves in ascending pairs, arising from the apex of the pseudobulbs, twistingly recurved, quite rigid and coriaceous, paler green beneath; spike arising from the basal side of the pseudobulb, erect at the base, which is densely clothed with marcescent sheaths; otherwise the green rachis is gracefully recurved; the ovary yellowish striate; the floral organs testaceous brown: Davao District, Mount Apo, *E. B. Copeland s. n.*, April 1904. On mossy tree. 6300 feet altitude.

Since the publication of the fifth fascicle of Orchidaceae I have been able to compare the Philippine species, now referred to *Pholidota carnea*, with an abundance of material from Java. The characters on which I relied for the recognition of a new species seem to be inconsequential, and I believe it is best to neglect them. *Pholidota carnea* is an addition to the orchid flora of the Philippines. I have seen Philippine specimens only from Mindanao.

Acoridium exasperatum *Ames sp. nov.* Herba epiphytica, pusilla. Radices fibratae, ramosae, glabrae. Pseudobulbi semifusiformes, juniores vaginis acutis demum in fibras solutis inclusi, vagina summa pseudobulbum multo superans, caespitosi, monophylli. Folium oblongum utrinque attenuatum, coriaceum, acutum, in petiolum brevem contractum. Pedunculus terminalis, pars pedunculi infra racemum folio brevior, nuda, filiformis. Racemus elongatus folii apicem superans, distichiflorus. Bracteae inflorescentiae glumaccae, pedicellum cum ovario superantes, late rotundato-ovatae, acutae, nervosae, margine involutae. Sepala lateralia lanecolata, acuta, per medium conspicue uninervia. Sepalum dorsale ovato-lanceolatum, acutum. Petala late ovata, acuta. Labellum trilobatum; lobis lateralibus falcatis, obtusis, erectis; lobo medio subquadrato, apiculato vel trilobulato, lobulo terminali triangulari.

Discus leviter coneavus, prope basim lobi lateralis utriusque et in depressione disci callus vel papilla. Columna generis.

Epiphytic caespitose herb. Roots much branched, spreading, smooth. Pseudobulbs 1.5 cm. long, 2 mm. in diameter at the base, 1 mm. thick at the summit, yellowish when dry, wrinkled, when young covered with closely appressed sheaths (when mature surrounded by the fibrous remains of the sheaths), monophyllous. Leaf 3.5-8 cm. long, 5-6 mm. wide near the middle, oblong, acute, obscurely apiculate, with the mid-nerve conspicuous beneath. Petiole about 1 cm. long, slender. Peduncle including the rachis of the raceme up to 10 cm. long, naked below the raceme, very slender. Raceme 4-5 cm. long, about 5 mm. in diameter, with the white flowers distichously arranged. Bracts of the raceme 2 mm. long, round-ovate, acute, longitudinally nerved, exceeding the ovary. Pedicel with the ovary about 1.5 mm. long. Lateral sepals 2 mm. long, 1 mm. wide below the middle, lanceolate, acute, mid-nerve evident. Dorsal sepal 2 mm. long, 1 mm. wide below the middle, lanceolate, acute. Petals 1.75 mm. long, 1 mm. wide, broadly ovate, or elliptic, acute, with the mid-nerve evident. Labellum 3-lobed, 1 mm. long, 1.75 mm. wide across the lateral lobes when spread out; lateral lobes falcate, obtuse, erect, each with a papilliform callus at the base near the sinus formed with the mid-lobe; middle lobe subquadrate, apiculate or trilobulate in front with the middle lobule triangular acute. Disc lightly concave with a small papilliform callus in the center. Column ebraehiate.

Closely allied with *Acoridium microchilum* (Schltr.) Ames and *A. tenue* Ames, but separable from them by the petals being broadly ovate or elliptical. In contour the labellum is very similar to that of *A. microchilum* (cf. Ames Orch. 2 (1908) t. 21, fig. 2). [Fig. 6.]

PHILIPPINES, Luzon, Rizal Province, Mount Lumutan, *M. Ramos, Bureau of Science 42338*, April 21, 1923. On tree in mossy forest. 4000 feet altitude. (TYPE in Herb. Ames No. 26729.)

Acoridium marginatum Ames sp. nov. Herba epiphytica, caespitosa, maxime *A. rhombophoro* affinis, quod haec species habitu et structura conspicue simulat. Radices albae, fibratae. Pseudobulbi conferti, anguste obpyriformes, in sicco valde rugosi, monophylli. Folium oblongo-lanceolatum, bene marginatum, apice rotundatum, apiculatum, usque ad basim attenuatum, in petiolum contractum. Pedunculus gracilis, cum racemo folium permulto excedens. Racemus usque ad vigintiflorus, rachide anfracta vel flexuosa. Bracteae pedunculi infra racemum imbricantes; bracteae flores subtendentes glumaceae, patentes, pedicellum cum ovario excedentes. Flores aurei, distichi. Sepala lateraliter ovata, obtusa vel subacuta, carnosa, trinervia. Sepalum dorsale anguste ellipticum. Petala cuneato-flabellata vel subrhomboidea, apice rotundata, obtusa. Labellum valde carnosum, panduratum, basi valde concavum vel subsaccatum. Columna generis.

Epiphytic herb up to 24 cm. high when measured from the base of the pseudobulb to the tip of the raceme. Roots rather coarse, whitish, smooth. Pseudobulbs about 1.5 cm. long, obpyriform, deeply wrinkled longitudinally when dry, 5 mm. in diameter near the base, monophyllous. Leaf 6–12 cm. long, up to 11 mm. wide, narrowly oblong-lanceolate, with a conspicuous raised median nerve, marginate, obtuse with a distinct mucro, narrowed toward the base into a slender petiole. Petiole 2–3 cm. long. Peduncle with the raceme up to 23 cm. long, naked to the base of the raceme where it is provided with several closely imbricating scarious bracts. Raceme 6–9 cm. long, about 1.5 cm. across, bearing from ten to twenty flowers, rarely more. Flowers distichous, yellow, about 4 mm. apart, rather fleshy, opening in succession. Bracts of the raceme about 3 mm. long, ovate, glumaceous, exceeding the pedicellate ovary. Lateral sepals spreading, 4 mm. long, 2.75 mm. wide below the middle, ovate, obtuse or subacute, lightly carinate along the middle on the outer surface, 3-nerved. Dorsal sepal 4.75 mm. long, 2 mm. wide, narrowly elliptical, obtuse, 3-nerved. Petals 4 mm. long, 4 mm. wide above the middle, flabelliform, rounded at the tip, 3-nerved, with the lateral



nerves branched. Labellum 2 mm. long, about 1 mm. wide above the middle, pandurate (sometimes with porrect lobules, one on each side near the base), broadest above the middle, sometimes bluntly apiculate, fleshy, deeply concave or saccate at the base in front of the column. Column less than 1 mm. long, stout, ebrachiate.

Acoridium marginatum is most closely allied with *A. rhombophorum* (Reichb. f.) Ames, from which it differs in having much larger flowers and a very different labellum. From *A. irigense* Ames it is readily separable by the leaves being distinctly marginate. [Fig. 5.]

PHILIPPINES, Luzon, Rizal Province, Mount Irig, *M. Ramos s. n.*, April 19, 1922. Epiphyte on trees, flowers yellow. 4900 feet altitude. (TYPE in Herb. Ames No. 26137.)

***Acoridium mindanaense* Ames sp. nov.** Radices fibratae, ramosae, glabrae. Pseudobulbi graciles, semifusiformes, in sicco flavidi, corrugati, monophylli. Folium anguste lineare, obtusum, apice breviter apiculatum, nervo medio subtus prominenti. Pedunculus filiformis, ascendens, usque ad racemum nudus, folium excedens. Racemus arcuatus, distichiflorus, pergracilis, multiflorus. Bractee racemi glumaceae, ovarium pedicellatum multo superantes, subtiliter nervosae, margine leviter involuta, rotundato-ovatae. Sepala lateraliter bene lanceolata, acuminata, valde acuta, membranacea, uninervia, basi rotundata. Sepalum dorsale lanceolatum, acuminatum, acutum, per medium uninervium. Petala similia sed minora. Labellum trilobatum; lobis lateralibus subellipticis, valde obtusis, erectis, prope basim lobi utriusque callo papilloso triangulo instructis; lobo medio cuneato, antice apiculo triangulo instructo. Discus leviter saccatus, in depressione disci callo papilliformi. Columna generis.

Epiphytic herb, 20 cm. tall to tip of the raceme. Roots fibrous, 10 cm. or more long, branching, smooth. Pseudobulbs about 1.5 cm. long, when young concealed by closely appressed sheaths which soon break down into spreading fibres, semifusiform, yellowish when dry, wrinkled longi-



tudinally, about 2 mm. in diameter at the base, 1 mm. thick at the summit, unifoliate. Leaf 3-8 cm. long, 2 mm. wide, linear, tapering near the base into a slender sulcate petiole, obtuse, minutely apiculate, only the mid-nerve prominent beneath. Peduncle (up to the base of the raceme) 4.5-9 cm. long, filiform, ascending, with a sterile glumaceous bract at the base of the raceme, otherwise naked below. Raceme 4-7 cm. long, 3-4 mm. in diameter, with numerous distichously arranged flowers. Bracts of the raceme about 2 mm. long, 2 mm. wide, round-ovate, finely many-nerved, exceeding the ovary, glumaceous, with the margins somewhat involute. Pedicellate ovary 1 mm. long, slender. Lateral sepals scarcely 2 mm. long, .75 mm. wide, lanceolate, acuminate, acute, with a conspicuous mid-nerve. Dorsal sepal 1.75 mm. long, similar to the laterals. Petals 1.25 mm. long, less than 1 mm. wide, lanceolate, acute, with the mid-nerve conspicuous. Labellum about 1 mm. long, about 1 mm. wide across the lateral lobes; mid-lobe .25 mm. long, cuneate, rather fleshy, shallowly emarginate, with a triangular apicule at the tip; lateral lobes .5 mm. long, sub-elliptical, obtuse, erect, parallel with the column, each lobe with a minute, triangular-papilliform callus at the base near the sinus formed with the mid-lobe. Disc somewhat saccate or shallowly concave with an erect papilla in the middle. Column .5 mm. long.

A near ally of *Acoridium tenue* Ames, from which it differs most conspicuously in the narrow leaves, smaller flowers and different sepals and petals. [Fig. 6.]

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta. A. D. E. Elmer 11095, October 1912. (TYPE in Herb. Ames No. 13440.)

***Acoridium Serratoi* Ames sp. nov.** Radices fibratae, ramosae, glabrae. Pseudobulbi semifusiformes, graciles, in sicco longitudinaliter corrugati, juniores vaginati, vaginis demum fibratis, monophylli. Folium anguste lanceolatum, obtusum vel subacutum, breviter apiculatum, basi in petiolum gracilem contractum, nervo medio subtus prominenti. Pedunculus terminalis, cum racemo foliis multo longior,

filiformis, usque ad racemum nudus. Racemus gracilis, distichiflorus. Bracteae racemi glumaceae, ovarium pedicellatum superantes, late ovatae, abrupte acutae, nervosae. Sepala lateralalia anguste triangulari-lanceolata, valde acuta, trinervia, petalis longiora. Sepalum dorsale simile. Petala oblongo-lanceolata, acuta. Labellum trilobatum, saccatum; lobis lateralibus semicrescentiformibus, obtusis, erectis, membranaceis; lobo medio anguste reniformi, antice breviter apiculato. Discus prope basim lobi lateralis utriusque callo papilliformi instructus et in depressione disci callo minuto ornatus. Columna generis.

Epiphytic herb. Roots spreading, fibrous, much branched, smooth. Pseudobulbs 1.5–2 cm. long; caespitose, when dry about 2 mm. in diameter near the base and 1 mm. in diameter at the summit, semifusiform, longitudinally wrinkled, unifoliate. Leaf 7.5–11 cm. long, 6–9 mm. wide near the middle; narrowly lanceolate, obtuse or subacute, with an apiculate tip, contracted below into a slender petiole which is 1–1.5 cm. long. Peduncle terminal, naked up to the raceme, including the raceme up to 15 cm. long. Raceme about 7.5 cm. long, about 5 mm. in diameter, composed of numerous distichously arranged whitish flowers. Bracts of the raceme 2.5 mm. long, broadly ovate from a wide base, abruptly acute, nervose, glumaceous, exceeding the pedicellate ovary. Lateral sepals 3.5 mm. long, about 1 mm. wide at the base, narrowly triangular-lanceolate, acuminate, acute, 3-nerved. Dorsal sepal 3.5 mm. long, similar to the laterals. Petals 3 mm. long, 1 mm. wide, oblong-lanceolate from a broad base, acuminate, acute, membranaceous, mid-nerve evident. Labellum about 1 mm. long, ascending, saccate, 3-lobed; lateral lobes erect, curved slightly forward, semicrescentiform, .5 mm. long, obtuse, exceeding the middle lobe, membranaceous; middle lobe narrowly reniform, apiculate, about 1 mm. wide when spread out, somewhat fleshier than the lateral lobes. Disc with a papilliform callus at the base of each lateral lobe near the sinus formed with the middle lobe, and with a small papilla in the center. Column about 1 mm. long, ebrachiate. [Fig. 6.]

Acoridium Serratii resembles in habit *A. Curranii* Ames, from which it differs in the mid-lobe of the labellum and in the form of the petals.

PHILIPPINES, Luzon, Laguna Province, *Juan S. Serrato* s. n., September 1912. Flower white, nearly yellow. On tree in dense forest. (TYPE in Herb. Ames No. 26728.)

***Dendrochilum pangasinanense* Ames sp. nov.** Rhizoma validum, breve ut videtur. Pseudobulbi eongesti, elongati, semifusiformes, longitudinaliter sulcati, in sicco flavescens, monophylli. Folia petiolata, elliptico-oblonga, utrinque angustata, coriacea. Racemi folio juvenili synanthi, pedunculos nudos terminantes. Bracteae inflorescentiae glumaceae, subtruncatae, plus minusve erectae, paleaceae, multinervosae, ovarium bene pedicellatum subaequantes. Sepala lateralia quinquenervia, lanceolata, patentia, acuta. Sepalum dorsale sub simile, quinquenervium, acutum. Petala anguste elliptica, subobtusata, trinervia. Labellum trilobatum, carnosum; lobis lateralibus erectis, obtusis; lobo medio late ovato, acuto, per medium leviter et late sulcato. Discus tricarinatus earina media abbreviata. Columna valde areolata, apice obscure crenulato; alae laterales terminales nonnihil ad apicem inaequaliter bilobulatae, lobulo inferiore elongato triangulo.

Rhizome stout, abbreviated, with the pseudobulbs more or less crowded. Roots whitish, fibrous, branched. Pseudobulbs about 4.5 cm. long, erect, slenderly semifusiform, deeply wrinkled longitudinally when dry, yellowish, when mature subtended by the fibrous remains of elongated sheaths, monophyllous. Leaf petiolate; lamina of mature leaf about 10 cm. long, 21 mm. wide at the middle, elliptic-oblong, nervose; petiole 2 cm. long, terete below the middle, when immature the leaf embraces the erect peduncle and is subtended by four tubular sheaths. Peduncle with the raceme up to 25 cm. long, naked below. Raceme about 1 dm. long, slender, bearing about fifteen flowers. Bracts of the raceme about 5 mm. long, glumaceous, nervose, subtruncate, equaling the ovary. Lateral sepals 8 mm. long, 3.5 mm. wide, lanceolate, acute, 5-nerved. Dorsal sepal

9 mm. long, 3 mm. wide, lanceolate, acute, 5-nerved. Petals 8 mm. long, 3 mm. wide, narrowly elliptical, 3-nerved, sub-obtuse. Labellum 6.5 mm. long, panduriform, 3-lobed, rather fleshy; lateral lobes much abbreviated, about 1 mm. long to the sinus formed with the middle lobe, obtuse; middle lobe 4 mm. long, 3 mm. wide below the middle, ovate, acute, somewhat sulcate along the middle. Disc tricarinate, with the middle carina much shorter than the laterals. Column 4.75 mm. long, strongly curved forward, dilated upward, terminating in a broad inconspicuously crenulate dorsal wing; stelidia terminal, one on each side of the column, bilobulate or obscurely bilobulate at the tip, when bilobulate the lower lobule is triangular and longer than the upper one.

Closely allied to *Dendrochilum Clemensiae* Ames, from which it is readily distinguished by the terminal stelidia of the column, by the 5-nerved sepals, obtuse lateral lobes of the labellum and slightly larger flowers.

PHILIPPINES, Luzon, Pangasinan Province, *Maximo Ramos*, *Bureau of Science* 8286, May 1909. (TYPE in Herb. Ames No. 11252.)

Malaxis atosanguinea Ames sp. nov. Herba ter-
restris, valida, plus minusve bifoliata, infra folia vaginis
amplis approximatis vestita. Folia elliptica, utrinque at-
tenuata, acuminata, acuta, membranacea, conspicue ner-
vosa, basi in petiolum canaliculatum contracta. Pedunculus
elongatus, folio multo excedens. Racemus gracilis, multi-
florus, erectus ut videtur, floribus atropurpureis instructus.
Bracteae flores subtendentes lineari-lanceolatae, ovarium
aequantur vel excedentes. Pedicellus cum ovario distincte
quadrialatus. Sepala lateralia elliptica, obtusa, plus mi-
nusve convexa, patentia, membranacea. Sepalum dorsale
oblongo-ellipticum, obtusum, margine leviter revoluta. Pe-
tala linearia, margine valde revoluta. Labellum antice sex-
ad septemlobulatum; lobulis lateralibus antice triangulari-
bus, post columnam in auriculas obtuse triangulares pro-



ductis. Discus prope columnam excavatus, prope medium labelli callo crescentiformi ornatus. Columna abbreviata superne utrinque obtuse alata.

A terrestrial herb up to 50 cm. tall when measured to the tip of the slender raceme. Roots coarsely fibrous, conspicuously villose. Stems erect, 11–14 cm. long to the base of the lowermost leaf, concealed by four or more loosely appressed subimbricating scarious sheaths 1–4 cm. long. Leaves two to three or probably more, contracted at base, the chartaceous lamina 12–15 cm. long, up to 6.7 cm. wide, elliptical, acuminate, acute, conspicuously nervose when dry; petiole more or less canaliculate, the basal portion sheathing the stem. Peduncle with the slender raceme up to 30 cm. or more long, slender, erect, provided with a few scattered linear scarious spreading or dependent bracts. Raceme about 12 cm. long, scarcely 5 mm. in diameter, many-flowered. Bracts of the raceme about 4 mm. long, linear, spreading or dependent, scarious, equaling or exceeding the ovary. Pedicel with the ovary 3–4 mm. long, 4-winged, smooth. Flowers purplish. Lateral sepals 2.5–2.75 mm. long, 1.5 mm. wide, elliptical, obtuse, margin slightly rolled back. Dorsal sepal about 3 mm. long, 1 mm. wide, oblong-elliptical, obtuse, lightly convex. Petals 2.5 mm. long, about .5 mm. wide, linear, obtuse, margin strongly revolute. Labellum including the auricles about 4 mm. long, 6–7-lobulate in front; lateral lobules porrect, including the auriculate base 2.5 mm. long, the frontal free portion very short, triangular; the auriculate base 1.25 mm. long, obtusely triangular, continued backward behind the column; central lobules up to 1 mm. long. Disc strongly concave in front of the column, the depression margined in front with a fleshy crescent-shaped callus. Column 1 mm. long, with a blunterect wing at the summit on each side. [Fig. 7.]

Allied to *Malaxis Wenzelii* Ames, from which it differs in the segments of the mid-lobe of the labellum, in the dimensions of the petals and in the leaves.

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, A. D. E. Elmer 13815, September 1912. (TYPE in Herb. Ames No. 13439.)

Malaxis bulusanensis Ames *sp. nov.* Caulis foliis radicalibus brevior, di- vel triphyllus, basi plus minusve tumidus. Folia elliptico-lanceolata vel elliptica, acuta, gradatim in petiolum contracta, membranacea, in sicco valde chartacea, multinervia. Petiolus caulem vaginans, amplus. Pedunculus elongatus, folia multo excedens, infra racemum paucibracteatus. Racemus elongatus bracteis flores subtendentibus valde deflexis, triangulari-linearibus. Sepala lateralia elliptica, apice cucullata, valde obtusa, quadrinervia. Sepalum dorsale oblongum, obtusum, trinervium, margine revoluta. Petala lineari-oblonga, obtusa, uninervia, margine valde revoluta. Labellum antice octo- vel decemdentatum, post columnam in auriculas permagnas longe triangulas productum. Discus ante foveam callo transverso instructus. Columna generis.

Roots fibrous, villose. Stems about 4.5 cm. tall, 2-3-leaved, more or less tumid at the base, concealed by sheathing petioles. Lamina of the leaves 9-13.5 cm. long, up to 5.5 cm. wide, elliptic-lanceolate or elliptical, acute, membranaceous, many-nerved, gradually contracted into wide petioles which become sheathing at the base. Peduncles up to 35 cm. long, much exceeding the leaves, with a few linear bracts below the raceme, longitudinally and shallowly sulcate. Racemes up to 21 cm. long, very slender, about 1 cm. in diameter, many-flowered, flowers opening in succession. Bracts of the raceme about 5 mm. long, narrowly triangular-lanceolate, acute, sharply deflexed. Ovary 6-winged, curved. Lateral sepals 5 mm. long, elliptical, cucullate at the tip, 4-nerved. Dorsal sepal 6 mm. long, about 2 mm. wide near the middle, oblong, obtuse, 3-nerved, margin revolute. Petals 5 mm. long, 1 mm. wide, linear-oblong, obtuse, 1-nerved, margin revolute. Labellum including the auricles 9 mm. long, 5.5 mm. wide in front of the column, coarsely 8-10-toothed or lobulate in front, cordate-sagittate in outline; auricles 4 mm. long, 2 mm. wide, triangular, subacute, prolonged behind the column. Disc with a small transverse thickening or callus in front of the shallow fovea. Column 2 mm. long.

Allied to *Malaxis Taylorii* Ames, from which it differs in the structure of the labellum.

PHILIPPINES, Luzon, Sorsogon Province, Irosin, Mount Bulusan, A. D. E. Elmer 14702, October 1915. (TYPE in Herb. Ames No. 26317): Elmer 14830, November 1915.

Malaxis epiphytica Ames *sp. nov.* Herba epiphytica, glabra. Radices incrassatae, lanuginosae. Folia conferta subrosulata, ascenduntia, elliptico-lanceolata, acuminata, acuta, basi in petiolum sulcatum contracta, subtus purpurea, omnia tenuia. Pedunculus demum folia superans, infra racemum paucibracteatus, bracteis linearibus acutis nonnihil dependentibus. Racemus multiflorus, elongatus. Bracteae inflorescentiae lineares, acutae. Flores extus purpurei, glabri. Sepala lateralibus elliptica, obtusa, concava, trinervia. Sepalum dorsale oblongo-ellipticum, utrinque leviter attenuatum, trinervium. Petala anguste oblonga, obtusa, uninervia. Labellum trilobatum; lobis lateralibus antice longe tridentatis; lobo medio bi-vel tridentato. Auriculae labelli post columnam extensae, obtuse triangulares. Columna generis.

Epiphytic herb 26 cm. tall to the tip of the raceme. Roots up to 10 cm. long, fleshy, covered with matted, woolly hairs. Stems concealed by the sheathing leaves, stout, erect. Leaves crowded at the base of the plant, about eight in number, increasing in size upwards, 9-20 cm. long, 2-5.2 cm. wide, smooth, elliptic-lanceolate, acuminate, acute, in living specimens bronzy green above and purplish beneath, delicate in texture, ascending, contracted at base in sheathing petioles. Peduncle about 20 cm. long, with several linear acute bracts below the raceme. Raceme 6 cm. or more long, the flowers opening in succession, the flowering period being a long one. Bracts of the raceme up to 1 cm. long, linear, acute, exceeding the slender ovary. Pedicel with the 6-winged ovary 5.5 mm. long. Lateral sepals 4-4.5 mm. long, about 3 mm. wide, elliptical, obtuse, strongly concave, 3-nerved. Dorsal sepal 4.5 mm. long, 2.5 mm. wide, oblong-elliptical, obtuse, 3-nerved. Petals 4 mm. long, 1 mm. wide, narrowly oblong, obtuse, 1-nerved. Labellum 6 mm. long

including the auricles, 3-lobed, with the lateral lobes tridentate; lateral lobes including the auricles up to 5 mm. long, divided in front into three teeth of which the middle one is the longest and up to 2.5 mm. long, linear, acute; middle lobe 2.5 mm. long, about 2 mm. wide, bilobulate in front or sometimes trilobulate, the lobules more or less obtuse. Auricles 2 mm. long. Column 1 mm. long.

In the details of the labellum *M. epiphytica* is very similar to **Malaxis micrantha** (*Hook. f.*) *Ames comb. nov.* (*Microstylis micrantha* *Hook. f.* in *Hook. Icon. Pl.* (1889) t. 1834), but is clearly distinguished by the larger flowers, somewhat different habit and larger vegetative parts. Among Philippine species it is most closely related to *Malaxis dentata* Ames, from which it differs in its larger flowers and longer lip-segments. Another closely allied species is *M. McGregorii* Ames, from which *M. epiphytica* differs in having a narrower labellum with shorter auricles and longer lip-segments.

PHILIPPINES, Mindanao, Cotabato District, C. M. Weber 223, August 24, 1911. Epiphyte on tree trunk. Flowers with purple exterior and yellow interior. 2700 feet altitude. (TYPE in Herb. Ames No. 12491.)

Malaxis lilacina *Ames sp. nov.* Herba epiphytica, glabra, radicibus elongatis, lanuginosis. Caules abbreviati, tumidi, petiolis vaginantibus foliorum obtecti. Folia plus minusve radicalia, verisimiliter succulenta, lanceolata vel anguste elliptica, utriusque attenuata, acuminata, acuta, in petiolum contracta. Petioli caulem abbreviatum vaginantes. Pedunculus folia superans, bracteis lineari-triangularibus demum valde deflexis obtectus, paene usque ad basim florifer. Flores in racemo denso dispositi. Sepala lateralia elliptica, obtusa, uninervia vel obscure trinervia. Sepalum dorsale anguste ellipticum, obtusum. Petala lineari-oblonga, obtusa, uninervia, margine valde revoluta. Labellum cordatum, auriculis valde elongatis post columnam extensis triangularibus obtusis, antice bilobulatum, obtusum, ante foveam callo transverso instructum. Columna generis.

Epiphytic herb 18 cm. tall to the tip of the raceme. Roots fibrous, lanuginose, spreading. Stems abbreviated, tumid at the base, about 2 cm. long, covered by the sheathing petioles. Leaves three to five, more or less radical, approximate; lamina 4–12 cm. long, 1.7–5 cm. wide, elliptic lanceolate, acuminate, acute, gradually narrowed toward the base. Petioles about 2 cm. long, dilated at the base. Peduncle with the raceme 10–15 cm. long, floriferous almost to the base, only slightly exceeding the leaves, the floral bracts becoming strongly deflexed as the flowers mature and fall off. Bracts about 5 mm. long, narrowly triangular, acute. Lateral sepals 2 mm. long, 1.5 mm. wide, elliptical, obtuse, 3-nerved, the lateral nerves sometimes obscure. Dorsal sepal 3 mm. long, 1.5 mm. wide at the middle, elliptic-oblong, obtuse. Petals 2.5 mm. long, hardly 1 mm. wide, linear-oblong, obtuse, with the margin strongly revolute, 1-nerved. Labellum including the auricles 3.5 mm. long, 2.5 mm. wide near the base of the column, cordate with the apex obtusely bilobulate; auricles 1.24 mm. long, about 1 mm. wide, narrowly triangular, obtuse. Disc with a transverse callus in front of the fovea near the base of the column. Column 1.25 mm. long, auricles thickened.

The nearest ally of this species is *Malaxis negrosiana* Ames, which has larger flowers, with the auricles of the labellum 3 mm. long.

PHILIPPINES, Leyte, C. A. Wenzel 0641, November 12, 1914. Epiphyte. Flowers lilac. 600 meters altitude. (TYPE in Herb. Ames No. 16681): Wenzel 0667, November 15, 1914. Epiphyte in forest. Flowers purple. 600 meters altitude. Panay, Antique Province, Richard C. McGregor 6205, June 20, 1918. Mossy forest on ridge east of Culasi. 900 meters altitude.

Malaxis Maxonii Ames sp. nov. Radices fibratae, villosae. Rhizoma repens, validum. Caules pseudobulbosi demum valde incrassati, obpyriformes, vaginis arcte appressis obtecti. Folia duo, elliptico-ovata vel ovata, acuta, membranacea, in petiolos elongatos producta. Pedunculus erectus, foliis longior, conspicue alatus. Inflorescentia

elongata, floribus succedaneis. Pedicellus cum ovario gracilis, elongatus. Flores virides. Sepala lateralibus oblongo-elliptica, obtusa, apice incrassata, trinervia, basi cohaerentia. Sepalum dorsale simile. Petala linearia, usque ad apicem attenuata. Labellum sagittatum, apice tridentatum; auriculae labelli semicrescentiformes, acutae. Discus conspicue et profunde bicameratus. Columna generis.

Roots spreading, fibrous, densely villous. Rhizome about 5 mm. thick, creeping. Stems at length pseudobulbous, 2-leaved. Pseudobulbs up to 4 cm. long, about 2 cm. thick at the base, obpyriform, clothed with scarious sheaths which persist. Leaves approximate, produced at base into elongated petioles; lamina 9-13 cm. long, 4.5-8 cm. wide, elliptic-ovate or ovate, acute, rounded at the base, membranaceous. Petioles 5-11 cm. long, that of the upper leaf clasping the petiole of the lower leaf. Peduncle with the raceme 14-20 cm. long conspicuously winged, naked below the raceme, clasped by the base of the upper leaf. Raceme 3-5 cm. long, with a thickened rachis. Flowers greenish, opening in succession. Bracts of the raceme spreading, at length somewhat deflexed, 2.5 mm. long, triangular-lanceolate, greenish. Pedicel with the ovary 1.5-2 cm. long, slender, obliquely spreading. Lateral sepals about 7 mm. long, 2.5 mm. wide at the middle, coherent at the base, oblong-elliptic, obtuse, with the margin deflexed, 3-nerved, somewhat thickened at the tip. Dorsal sepal 7 mm. long, 3.5-4 mm. wide, similar to the laterals. Petals 4 mm. long, linear, narrowed gradually toward the tip, less than 1 mm. wide. Labellum including the basal auricles 5 mm. long, 3.5-4 mm. wide below the middle, broadly sagittate with a conspicuously tridentate apex; teeth unequal, the middle tooth much exceeding the lateral ones, 1 mm. long; auricles 2 mm. long, semicrescentiform, acute, incurved. Disc fleshy, with two deep depressions near the middle which are rounded at the bottom and separated by a heavily thickened longitudinal partition. Column abbreviated.

Malaxis Maxonii is a close ally of *M. hastilabia* (Reichb. f.) Ktze., from which it differs conspicuously in having

flowers which are about three times larger. Flowers preserved in alcohol indicate that the labellum is orange-yellow in living material.

NICARAGUA, Mombacho Volcano, *Maxon, Harvey & Valentine* 7770, July 5, 1923. Terrestrial. Flowers greenish. 960 meters altitude. (TYPE in U. S. Nat. Herb. No. 1180026.)

Liparis bontocensis *Ames sp. nov.* Radices fibratae, in sicco longitudinaliter sulcatae. Pseudobulbi verisimiliter aggregati, erecti vel ascendentes, semifusiformes, e basi usque ad apicem leviter angustati, bifoliati. Folia approximata, anguste lanceolata, acuta, articulata, in sicco valde nervosa, vix petiolata, pedunculo cum racemo breviora. Pedunculus e spatha conduplicata oriens, infra racemum paucibracteatus, bracteis anguste lanceolatis, in sicco scariosis. Racemus terminalis, laxis, elongatus, multiflorus floribus quaquaversis. Bractee racemi anguste lineares, quam ovarium pedicellatum paulum breviores, acutae. Sepala lateralibus oblonga, obtusa, basi et apice leviter angustata, trinervia. Sepalum dorsale simile sed angustius. Petala linearia, sepalis lateralibus vix breviora. Labellum e basi cuneata et obscure cordata oblique ascendens, prope medium valde deflexum, supra medium profunde bilobatum; lobis truncato-obtusis margine inaequaliter denticulata. Discus prope basim labelli bicarinatus. Columna gracilis.

Roots whitish. Pseudobulbs 3.5-4 cm. long, about 1 cm. in diameter at the base, tapering upwards, terminated by two alternate or subopposite leaves, much wrinkled longitudinally when dry. Leaves about 5 mm. apart, articulated, 17-18.5 cm. long, 18-21 mm. wide, narrowly lanceolate, broadest above the middle, acute, tapering gradually from about the middle to the articulated base, nervose when dry, ascending, slightly spreading, shorter than the inflorescence. Peduncle with the raceme terminal 23 cm. long, arising from a spathe, provided below the raceme with several lanceolate scarious bracts which are about 8 mm. long. Raceme about 15 cm. long, 2 cm. in diameter, many-flowered, lax. Bracts of the raceme about

6 mm. long, narrowly triangular-lanceolate, acute, slightly shorter than the pedicellate ovary, spreading. Pedicel with the ovary 7 mm. long. Lateral sepals 5–6 mm. long, 2 mm. wide, oblong, obtuse, 3-nerved, rounded at the base, recurved. Dorsal sepal about 5 mm. long, 1.25 mm. wide, similar to the lateral sepals. Petals up to 5.5 mm. long, .75 mm. wide, linear. Labellum 7 mm. long, obliquely ascending from a cuneate obscurely cordate base, 4.5 mm. wide near the tip, sharply deflexed above the middle, margin minutely glandular, deeply bilobulate at the tip, sometimes with an apicule between the lobules, margin of the lobules unequally denticulate. Disc with a keel on each side near the base. Column 3 mm. long, slender, arching forward, dilated at the base and at the apex.

Closely allied to *Liparis trichoglottis* (Ames) Schltr., from which it differs in the diphyllous pseudobulbs and in the margin of the labellum being inconspicuously glandular. The texture of the flowers recalls *Liparis latifolia* Lindl.

PHILIPPINES, Luzon, Bontoe Subprovince, Bauco, *Father M. Vanoverbergh* 3947a, November 17, 1914. 1700 meters altitude. (TYPE in Herb. Ames No. 26311): *Vanoverbergh* 1245, May–June 1911. Epiphyte. Flowers greenish, labellum brown. 1650 meters altitude.

***Liparis palawanensis* Ames sp. nov.** Radices fibratae, plus minusve elongatae. Pseudobulbi eacspitiosi, e basi lata angustati, foliis infrabulbosis usque ad medium pedunculi attingentibus, anguste ellipticis, foliis duobus ex apice pseudobulbi anguste ellipticis vel lanceolatis. Folia in sicco chartacea, nervosa, valde acuta, utrinque angustata, in petiolum conduplicatum brevem contraeta. Pedunculus folia terminalia superans, infra raecum paucibracteatus. Racemus laxis, plus minusve quindecimflorus. Bractee racemi ovario breviores, triangulares, acutae, in sicco scariosae. Sepala lateralibus oblonga, a medio usque ad apicem acutum leviter attenuata. Sepalum dorsale simile sed minus. Petala linearia, sepalo dorsali vix longiora, obtusa. Labellum euneatum, apice profunde bilobatum; lobis di-

varicatis, subquadratis, margine apicali dentatis. Discus prope basim labelli callo bilobato instructus. Columna generis.

Roots fibrous, elongated. Pseudobulbs about 2 cm. long, narrowed upward from a broad base, caespitose. Leaves basal and terminal, the basal ones subtending the pseudobulbs, 8 cm. long more or less, 1.9 cm. wide, contracted at base into a broad sheathing petiole, narrowly elliptical, acute; terminal leaves up to 13.5 cm. long, 3.3 cm. wide, borne in pairs at the summit of the pseudobulbs, narrowed from above the middle to form an abbreviated petiole, narrowly elliptical or lanceolate, acuminate, acute, chartaceous and nervose when dry. Peduncle terminal, together with the raceme 14 cm. long, with an abbreviated spathaceous bract at the base. Raceme 6–8 cm. long, about 2 cm. in diameter, about 15-flowered, with the flowers 5–7 mm. apart. Bracts of the raceme about 4 mm. long, triangular, acute. Pedicel with the ovary 6 mm. long, slender. Lateral sepals 5 mm. long, 2 mm. wide, oblong, tapering gradually to an acute or subobtuse tip. Dorsal sepal 4 mm. long, 1.5 mm. wide, oblong, subacute. Petals 4.75 mm. long, .75 mm. wide, linear, obtuse. Labellum 7 mm. long, 4 mm. wide above the middle, cuneate from a somewhat concave base, deeply bilobed above the middle; lobes terminal, divaricate, subquadrate, with the anterior margin unequally and obtusely dentate. Disc provided with an erect bilobed callus near the base of the column, smooth. Column 3 mm. long, curved forward, dilated and winged at the summit.

PHILIPPINES, Palawan, Alfonso XIII, *C. M. Weber* 612, October 14, 1912. Found in forest. Flowers yellow. Sea-level. (TYPE in Herb. Ames No. 26303.)

Oberonia Reilloi *Ames sp. nov.* Radices fibratae, in sicco albescentes. Caules caespitosi, basibus foliorum omnino obiecti. Folia ensiformia, oblique ascendunt, disticha, plus minusve incurvata, apicem racemi aequantia vel excedunt, a latere visa linearia, acuta. Pedunculus terminalis, usque ad basim florifer, valde alatus. Racemus

NEW OR NOTEWORTHY ORCHIDS

cylindraceus, densiflorus. Bracteae flores subtendentes lanceolatae, margine minute denticulatae vel obscure crenulatae. Flores parvuli. Sepala lateralia ovata, acuta. Sepalum dorsale ellipticum, obtusum. Petala late spathulata, margine crosa glandulosa, apice obtusa vel rotundata. Labellum trilobatum; lobis lateralibus rotundatis, valde obtusis, margine plus minusve erosis; lobo medio late cuneato, antice bilobulato apiculo interjecto, margine plus minusve glanduloso et croso. Discus glaber. Columna valde abbreviata.

Roots fibrous, copious, whitish in dried specimens. Stems caespitose, 3-4 cm. long to the base of the peduncle, entirely concealed by the sheathing bases of the leaves, more or less flattened. Leaves about six, the lower ones about 1.5 cm. long, the upper ones up to 6 cm. long, ensiform, 4 mm. wide, obliquely ascending, curved inward, equaling or exceeding the tip of the raceme. Peduncle with the raceme up to 6 cm. long, prominently several-winged longitudinally, floriferous almost to the base, with several ascending imbricating basal bracts. Raceme up to 5 cm. long, cylindrical, many-flowered. Bracts of the raceme lanceolate, acute, with the margin obscurely and minutely crenulate. Pedicel with the ovary obliquely ascending. Lateral sepals hardly 1 mm. long, .75 mm. wide, ovate, acute. Dorsal sepal 1 mm. long, elliptical, obtuse. Petals 1 mm. long, .5 mm. wide, broadly spatulate, obtuse, with the margin unequally glandular or erose. Labellum 3-lobed, .75 mm. long, hardly 1 mm. wide between the tips of the expanded lateral lobes, smooth; lateral lobes rounded, .5 mm. long and broad, margin irregularly erose; middle lobe hardly .5 mm. long and broad, cuneate or subquadrate, bilobulate and more or less apiculate in front. Column .5 mm. long.

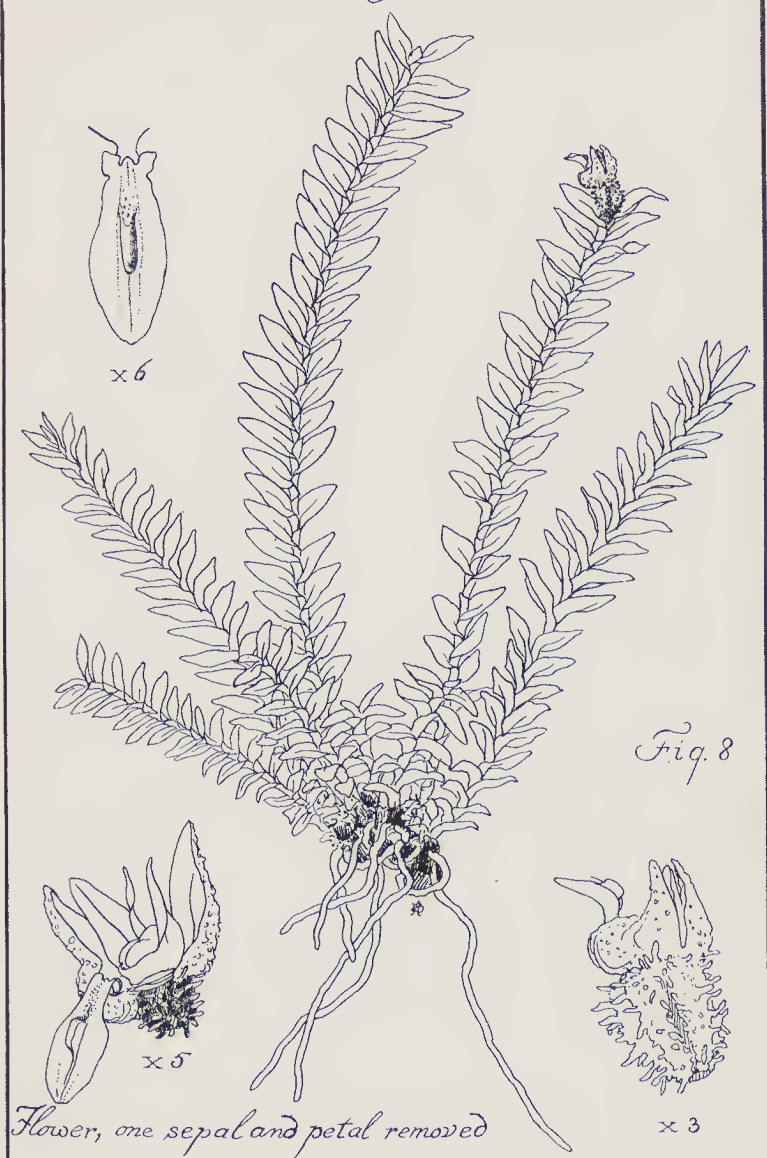
Plant similar in habit to *Oberonia cylindrica* Lindl., but smaller, with much smaller flowers and a different labellum.

PHILIPPINES, LUZON, Laguna Province, Dahikan, *Juan Reillo* 20, June 19, 1912. Epiphyte on tree. (TYPE in Herb. Ames No. 13275.)

Podochilus hystricinus Ames *sp. nov.* Herba epiphytica, dense caespitosa. Caules omnino foliosi, simplices, leviter curvati. Folia disticha, oblique ascendentia, basibus caulem leviter amplexentia, oblongo-elliptica, breviter mucronata. Inflorescentia terminalis vel subterminalis, pauciflora. Sepala lateralalia triangularia, acuta, mentum ventricosum formantia, extus leviter carinata. Sepalum dorsale ovatum, valde concavum. Petala oblongo-lanceolata, acuta, membranacea, extus nervo medio prominenti. Labellum basi breviter sagittatum, auriculis incrassatis supra basim in laminam elliptico-lanceolatam obtusam expansum. Discus prope basim labelli dense glandulosus, prope medium callo lateraliter complanato erecto quadrato instructus. Columna abbreviata, rostello elongato demum bipartito. Ovarium conspicue muricatum.

Epiphytic herb up to 13 cm. tall. Stems slender, caespitose, leafy to the base. Leaves distichous, 1.5–2 mm. apart, 6–10 mm. long, 2.5–3 mm. wide, oblong-elliptic, mucronate, clasping the stem at base, jointed to cylindrical persistent sheaths, obliquely ascending. Inflorescence terminal or sometimes produced from the axils of the upper leaves, few-flowered, rachis about 4 mm. long. Bracts of the raceme up to 2 mm. long, lanceolate, acute, concave. Ovary conspicuously muricate, ellipsoidal when mature. Lateral sepals 4.5 mm. long, 1.5 mm. wide, forming a conspicuous ventricose mentum which is 2.5 mm. long, triangular-lanceolate, acute, with the mid-nerve prominent on the outer surface. Dorsal sepal about 4 mm. long, ovate, concave. Petals 3 mm. long, about 1.5 mm. wide, oblong-lanceolate. Labellum 4.5 mm. long, sagittate at the base; auricles retrorse, .75 mm. long, and conspicuously thickened along the inner margin; above the base expanded into an elliptic-lanceolate, obtuse lamina which bears near the middle of the upper surface an erect conspicuous laterally flattened subquadrate callus which is thickened posteriorly and minutely glandulose. Disc between the median callus and the sagittate base conspicuously glandular-pubescent.

PODOCHILUS *hystericinus* Ames



Column terminated by a membranaceous, bipartite rostellum. Capsule about 4 mm. long, provided with numerous blunt excrescences. [Fig. 8.]

PHILIPPINES, Leyte, C. A. Wenzel 0262, February 11, 1914. Epiphyte in forest. 750 meters altitude. (TYPE in Herb. Ames No. 26300): Wenzel 0870, February 15, 1915. 700 meters altitude.

Appendicula cuneata Ames sp. nov. Radices elongatae, villosae. Caules breves vel elongati, valde variabiles, a basi usque ad apicem foliosi, vaginis foliorum omnino obteeti. Folia disticha, oblique ascendunt, inter se satis distantia, oblongo-elliptica, apice bilobulata apiculo interjecto, margine apicali obscure crosa, nervo medio prominenti. Pedunculus terminalis, raro lateralis, gracilis, raro ramosus, usque ad basim floriger, plus minusve vigintiflorus, floribus in racemo elongato gracili dispositis, illis *A. xytriphorae* vix majoribus. Racemus per longum tempus apice alabastro bractea arcte incluso terminatus videtur. Bracteae racemi demum oblique patentes, valde coneavae, acutae. Rachis racemi leviter fractiflexa. Ovarium bractea subtendenti vix longius. Sepala lateralia mentum formantia, late triangularia, subaeuta, trinervia. Mentum obtusum, ovarium aequans. Sepalum dorsale elliptico-ovatum, obtusum, valde coneavum, trinervium. Petala oblongospathulata vel oblongo-cuneata, apice valde obtuso vel obtuse trilobulato. Labellum obscure oblongo-panduratum, apice truncatum, supra basim callo hippoerepiformi ornatum. Columna in pedem elongatum producta, rostello breviter exseiso.

Epiphytic herb 14–28 cm. tall. Roots fibrous, spreading, at least the upper portion villose. Stems unbranched, caespitose, 1–2 mm. in diameter, entirely concealed by the sheathing bases of the leaves, leafy to the summit. Leaves distichous, 1.5–3.5 cm. long, 5–9 mm. wide at the middle, decreasing in size very gradually toward the summit and base of the stem, oblong-elliptical, bilobed at the apex with a bristle-like apicule projecting between the lobes and with the apical margin somewhat erose or denticulate, narrowed



at the base and abruptly contracted, jointed to more or less complanate sheaths which are 5-10 mm. long. Peduncle commonly terminal, rarely terminal and lateral, simple or sometimes branched at the base, including the raceme up to 8 cm. long, elongating during the flowering period, the sterile or flowerless part shorter than the subtending leaf. Raceme many-flowered, slender, with a slightly zig-zag rachis. Bracts of the raceme 3-4 mm. long, with the margin more or less hyaline, strongly concave, ovate, acute, widely spreading, equaling the ovary during anthesis. Flowers white with a white and purple labellum. Lateral sepals 3 mm. long, forming a blunt mentum, 3 mm. wide to the tip of the mentum, broadly triangular, obtuse or sub-acute, 3-nerved, with the mid-nerve slightly prominent. Dorsal sepal 3 mm. long, strongly concave, elliptic-ovate, obtuse. Petals about 3 mm. long, 2 mm. wide across the tip, gradually narrowed toward the base, oblong-spatulate or cuneate-spatulate, truncate at the tip or obscurely and bluntly 3-lobed. Labellum 4 mm. long, about 3 mm. wide across the tip, subpandurate, truncate, 7-nerved. Disc provided near the base with a conspicuous U-shaped callus which is 1 mm. high at the base, its sides intramarginal and about 2 mm. long. Column 2 mm. long, prolonged into a conspicuous foot which is 2.5 mm. long; rostellum with a U-shaped incisure at the tip.

Closely allied to *Appendicula xytriophora* Reichb. f., from which it differs conspicuously in the shape of the petals and labellum, and in the tendency to produce simple stems. In *A. xytriophora* the petals tend to be oblong rather than cuneate-spatulate, and are about as broad at the tip as at the base, while the labellum is not conspicuously wider at the tip than at the base. [*Fig. 9, habit and flower.*]

PHILIPPINES, Leyte, C. A. Wenzel 0635, November 11, 1914. Epiphyte in forest. 600 meters altitude. (TYPE in Herb. Ames No. 26651): Wenzel 0702, November 23, 1914. 600 meters altitude: Wenzel 0685, November 20, 1914: Wenzel 0668, November 15, 1914. 600 meters altitude. On the evidence of other specimens examined this species would seem to be a native of Luzon, Mindanao and Samar.

Appendicula leytensis Ames *sp. nov.* Herba epiphytica. Radices villosae, fibratae. Caules simplices, caespitosi, foliosi, vaginis foliorum omnino obiecti. Folia elliptico-oblonga, disticha, apice bilobata apiculo interjecto, margine apicali vix erosa, basi leviter angustata, in sicco olivacea. Pedunculus terminalis, simplex, raro lateralis, paene usque ad basim floriger. Racemus per longum tempus alabastro bractea arcte incluso apice terminatus videtur, multiflorus, floribus illis *A. xytriophorae* vix minoribus. Sepala purpurea, lateralibus mentum obtusum formantibus, triangularibus, obtusis, trinerviis, nervo medio plus minusve prominenti. Sepalum dorsale valde concavum, ellipticum, subacutum. Petala elliptico-oblonga, apice rotundato-obtusum, trinervia. Labellum simplex, subrhombicum, valde obtusum vel truncatum, prope apicem callo minuto papilliformi ornatum, prope basim callo hippocrepiformi vel U-formi ornatum. Columna abbreviata.

Epiphytic herb. Roots fibrous, at least the upper portion villose. Stems caespitose, simple, leafy from base to summit, 14-26 cm. long, completely concealed by the sheathing bases of the leaves. Leaves 1.5-2.5 cm. long, 8 mm. wide, elliptic-oblong, bilobulate at the summit with an apicule between the lobules, olivaceous when dry, hardly decreasing in size from the middle of the stem toward the base and summit, distichous. Peduncle with the raceme about 8 cm. long, floriferous almost to the base, the flowerless portion equaling the subtending leaf. Raceme elongating as the flowers expand (ripe capsules being present simultaneously with opening buds), bearing twenty or more purple and yellow flowers. Bracts of the raceme 1-3 mm. long, lanceolate, soon strongly deflexed, about equaling the pedicellate ovary during anthesis, bracts below the raceme up to 8 mm. long, several, linear-lanceolate, ascending. Lateral sepals 3-3.5 mm. long, forming a blunt mentum, about 3 mm. wide, broadly triangular, obtuse or subacute, 3-nerved, with the mid-nerve more or less prominent on the outer surface. Mentum 2 mm. long. Dorsal sepal 3 mm. long, elliptic, concave. Petals about 3 mm. long, 1.5 mm. wide at the middle, elliptic-oblong, round-obtuse at the tip, 3-nerved. Labellum

3.5–4 mm. long, 3 mm. wide across the middle, more or less rhombic in outline from a broad base, 2 mm. wide near the blunt or truncate apex, with a small papilliform callus on the upper surface near the tip, 7-nerved. Disc ornamented near the base with a large U-shaped callus, the arms or sides of the callus extending to the middle of the labellum and more or less convergent. Column produced into a distinct, elongated foot.

The closest allies of *Appendicula leytenis* are *A. euneata* Ames and *A. xytriophora* Reichb. f. From the former it is readily separated by the elliptic-oblong petals and rhombic labellum. From *A. xytriophora* it differs in the simple stems, purplish rather than yellowish flowers, and in the tendency of the leaves to dry olivaceous green. Another difference between *A. leytenis* and *A. xytriophora* which is constant in the specimens examined is the erose margin of the tips of the leaves in the latter species, the margin of the leaf in *A. leytenis* being entire or nearly so. [Fig. 9, flower.]

PHILIPPINES, Leyte, C. A. Wenzel 0359, March 15, 1914. Epiphyte in forest. Sepals purple, petals purple and yellow, lip yellow. 500 meters altitude. (TYPE in Herb. Ames No. 26662): Wenzel 0361, March 17, 1914. Sepals flesh color, petals flesh color and purple, lip purple. 500 meters altitude: Wenzel 0283, February 23, 1914. Sepals purple, petals flesh color, lip yellow.

Agrostophyllum Elmeri Ames sp. nov. Caules elongati, foliosi, complanati, vaginis foliorum omnino obtecti. Folia oblongo-ligulata, utrinque angustata, coriacea. Inflorescentia capitata, bracteosa. Pedicellus valde dilatatus. Ovarium plus minusve trigonum. Sepala lateralia eymbiformia, lanceolata, extus per medium carinata, apice valde incrassata et lateraliter compressa. Sepalum dorsale lanceolatum, apice leviter incrassatum, ecarinatum. Petala anguste lanceolata, acuta, sepalis vix breviora. Labellum panduratum, basi valde concavum, carnosum, margine hypochilii erecta; epichilio orbiculari, septemnervio. Discus prope basim epichilii septo transverso calloso instructus. Columna apice tridentata.

A tall leafy herb of which only the upper part of a stem has been examined. Stem eomplanate above, entirely concealed by the sheathing petioles of the leaves. Petioles about 9 cm. long, equitant, conduplicate, about 2 cm. wide when spread out, ascending, persistent, longitudinally nervose, rigid. Leaves 18 cm. long, up to 1.8 cm. wide, jointed to the sheathing petioles, deciduous, ligulate, attenuated at the ends, obliquely ascending. Inflorescence terminal, capitate, sessile in the axil of the uppermost leaf, about 3 cm. long, and 3 cm. in diameter, densely bracteose, many-flowered. Pedicellate ovary about 8 mm. long, triangular in cross-section, 3-winged, tapering gradually upward. Lateral sepals 4 mm. long, 2 mm. wide when spread out, lanceolate, cymbiform, externally carinate along the middle nerve, thickened and laterally compressed at the apex. Dorsal sepal 3 mm. long, 2 mm. wide, lanceolate, acute, concave, eecarinate, hardly thickened at the tip. Petals 3 mm. long, 1 mm. wide below the middle, narrowly lanceolate, acute, membranaceous. Labellum 4 mm. long, 2 mm. wide across the orbicular obtuse epichile; hypochile 1.5 mm. long, about 2 mm. wide, fleshy, ventricose, rounded beneath, closed in front by a transverse erect septum. Column 2.5 mm. long, 1 mm. wide, tridentate at the summit.

In habit resembling *Agrostophyllum philippinense* Ames, from which it differs in the form of the epichile and in having broader petals. From the closely related *Agrostophyllum longifolium* Reichb. f. it differs chiefly in the details of the epichile.

PHILIPPINES, Luzon, Laguna Province, Los Baños, Mount Maquiling, A. D. E. Elmer 18047, June-July, 1917. (Type in Herb. Ames No. 16333.)

Ceratostylis Elmeri Ames sp. nov. Herba epiphytica, caespitosa, caulibus pendulis. Radices graciles, albido-villosae. Rhizoma valde curvatum, vaginis retinerviis obtectum. Vaginae amplae, rufae, elongatae, persistentes, usque ad basim folii attingentes. Folium rigidum, ascendens, atroviride, lineare, semiteres, apice inaequaliter bilobatum. Pedunculus elongatus, bracteatus, uniflorus. Sepala lateralialia

semilanceolata, aeta, usque ad medium eohaerentia, prope basim quadrinervia, prope medium sexnervia, mentum ventricosum formantia. Sepalum dorsale lanceolatum, aetum, septemnervium. Petala oblanceolata, obtusa vel late spatulata. Labellum petalis multo minus, breviter unguiculatum, supra unguem in laminam anguste ovatam obtusam subcordatam expansum, intus prope basim longe glanduloso-villosum, conspicue trinervium. Pes columnae longe glandulosus.

Epiphytic herb, caespitose, pendulous, with slender villose roots. Rhizome curved, ascending, 12–20 cm. long, with the slender pseudobulbs arising for the most part from the outer side of the curve, concealed by rufous retinerved ample sheaths. Pseudobulbs about 2 cm. long, very slender, obliquely ascending, cylindrical, concealed by retinerved rufous sheaths, monophyllous. Leaf up to 6 cm. long, linear, flat on the upper surface, somewhat rounded on the under side, unequally bilobed at the tip, obtuse. Peduncles subequal to the pseudobulbs, provided with a large bract below the ovary, clothed with elongated branching hairs which are easily detachable. Bract subtending the flower 9 mm. long, smooth. Pedicellate ovary conspicuously winged, about 1.5 cm. long, provided with weakly attached branching trichomes. Lateral sepals 12 mm. long, 3.75 mm. wide near the middle, asymmetrically lanceolate, united to about the middle, 6-nerved, smooth, forming a conspicuous obtuse mentum which is 3 mm. long. Dorsal sepal 13 mm. long, 4.75 mm. wide, lanceolate, acute, 7-nerved. Petals 12 mm. long, 5 mm. wide, oblanceolate or broadly spatulate, obtuse, 7-nerved. Labellum 3 mm. long, about 2 mm. wide just above the short claw, narrowly ovate-cordate, obtuse, 3-nerved, each lateral nerve with a short obliquely ascending branch. Claw of the labellum glandular-hairy within, forming a shallow depression at the base of the lamina. Column including the foot 3.5 mm. long; foot glandular-hairy.

In habit *Ceratostylis Elmeri* is somewhat similar to *C. philippinensis* Rolfe, from which it differs conspicuously in the larger flowers and in the oblanceolate or broadly spatulate petals.

PHILIPPINES, Mindanao, Davao District, Mount Apo, A. D. E. Elmer 11358, August 1909. Small loose tufts upon moss-covered tree trunk on Mount Calelan at 7750 feet: stems hanging, curved ascendingly, terete, covered with reddish brown strongly nerved sheaths, giving rise to leafy branchlets; leaves rigidly coriaceous, ascending, dark green, flat on the upper side, flattish convex beneath, the base covered with sheaths; flower ascending from the basal portion of the uppermost leaf axil, white. "Sumalipan." (TYPE in Herb. Ames No. 26936.)

Ceratostylis mindanaensis Ames *sp. nov.* Herba epiphytica, parvula, pauciramosa, ramis patentibus. Pseudobulbi abbreviati, teretes. Folia semiteretia vel triquetra, superne sulcata, apice acuta. Caules infra folia vaginis imbricatis rufis obtekti. Flores singuli, pilis albidis obtekti. Sepala lateralialia elliptico-oblonga, mentum obtusum formantia, apice subacuta, minute cucullata, extus pilosa. Sepalum dorsale simile sed minus, extus longe pilosum. Petala anguste lanceolata, acuta, membranacea, trinervia. Labellum unguiculatum, lanceolatum, subtus valde carinatum, apice triquetrum. Discus infra medium labelli valde bicarinatus, inter carinas glandulosus. Columna generis.

Epiphytic herb 6–11 cm. tall, caespitose, branching; branches 5–15 mm. long, concealed when young by closely imbricating rufous sheaths. Pseudobulb about 5 mm. long, cylindrical, terminated by a fleshy rigid leaf. Leaves about 3 cm. long, about 5 mm. thick in greatest diameter, subterete or triquetrous, grooved along the upper surface, when immature partly concealed by rufous bracts. Peduncle about 1 cm. long, ascending from among rufous bracts, densely clothed with soft whitish hairs. Flower white, with the much abbreviated pedicel subtended by an ample bract which is 3–4 mm. long. Ovary 3.5 mm. long, clothed with intertwining whitish hairs. Lateral sepals 4.5 mm. long, 2 mm. wide near the middle, forming a distinct obtuse mentum, elliptic-oblong, acute, with a minutely cucullate tip. Dorsal sepal 4 mm. long, hardly 2 mm. wide at the middle, similar to the lateral sepals and like them glandular-hairy

on the outer surface. Petals 4 mm. long, about 1 mm. wide near the middle, narrowly lanceolate, acute, 3-nerved, membranaceous. Labellum 4 mm. long, 2 mm. wide above the base, shortly unguiculate, with the claw ascending from the foot of the column; lamina simple, lanceolate, heavily carinate along the middle beneath, with the apex thickened and triquetrous. Disc bicarinate below the middle of the labellum, with the surface between the keels glandulose. Column 2 mm. long, dilated upwards, produced into a distinct foot.

Closely allied to *Ceratostylis pendula* Hook. f., but with larger flowers.

PHILIPPINES, Mindanao, Bukidnon Subprovince, Mount Dumalucpihan, *M. Ramos & G. Edaña*, Bureau of Science 39015, July 28, 1920. 5000 feet altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26330.)

Stelis cucullata *Ames sp. nov.* Radices graciles, fibratae. Caules secundarii elongati, graciles, erecti, vaginis tubulatis instructi, monophylli. Folium lineare, usque ad basim leviter angustatum, apice apiculatum, vix in petiolum contractum. Pedunculi cum racemo elongati, folium aequantes vel excedentes. Bracteae racemi oblique infundibuliformes, scariosae. Sepala lateralalia ovata, acuta, carnosa, extus per medium aliquando leviter carinata, trinervia. Sepalum dorsale simile. Petala cucullata, anguste flabellata, apice valde incrassata, trans apicem triangularia, trinervia. Labellum concavum, cucullatum, in circuitu rhombicum, trans medium callo instructum. Columna generis.

Roots finely fibrous, elongated, at length branching, whitish. Rhizome very much abbreviated. Secondary stems 3-7 cm. long, very slender, clothed with several elongated tubular scarios sheaths, monophyllous. Sheaths up to 3 cm. long, rather loosely appressed, acute. Leaf 6-8.5 cm. long, up to 5 mm. wide above the middle, linear-ob-lanceolate, tapering gradually toward the base, obtuse, apiculate. Peduncle up to 11 cm. long, subtended by a scarios spathaceous bract, for the most part floriferous very slender. Flowers numerous, pale yellowish, in a slender

raceme. Bracts of the raceme approximate, 1.5 mm. long, obliquely infundibuliform, scarious, with the points of insertion about 2 mm. apart. Pedicels about 3 mm. long. Lateral sepals 1.75 mm. long, 1.75 mm. wide, ovate, acute, very fleshy, sometimes lightly carinate along the middle on the outer surface, 3-nerved. Dorsal sepal similar. Petals hardly 1 mm. long, .75 mm. wide at the tip, narrowly flabelliform, triangular across the thickened apex, very fleshy, strongly cucullate, 3-nerved. Labellum scarcely 1 mm. long, about 1 mm. wide across the middle, cucullate, obtuse at the apex, with the margin more or less erect, rhombic in outline, with a transverse thickening across the middle. Column dilated upward, with the posterior part of the clinandrium obscurely 3-lobed.

Stelis cucullata is a close ally of *S. perplexa* Ames, from which it differs in part in having differently shaped, smooth sepals.

COSTA RICA, Hills south of Cartago, C. H. Lankester 475. (TYPE in Herb. Ames No. 26975): Peralta, Lankester 487, July 13, 1923. Flower greenish yellow.

***Stelis distantiflora* Ames sp. nov.** Caules secundarii verisimiliter elongati. Folium anguste elliptico-oblongum, utrinque attenuatum, apice obscure bidenticulatum. Pedunculus cum racemo valde elongatus, gracilis, ex axilla folii oriens. Flores in sicco atrobrunnei, inter se distantes, alterni, bracteis subtendentibus infundibuliformibus. Sepala lateralibus suborbicularibus vel transverse elliptica, trinervia, carnosa. Sepalum dorsale late ovatum, trinervium. Petala a basi cuneata flabelliformia, apice valde incrassata et rotundato-obtusata, intus infra medium plus minusve excavata. Labellum petalis multo minus, infra medium plus minusve membranaceum, supra medium valde incrassatum, antice rotundatum, excavatum, trans medium callo instructum. Columna supra medium valde dilatata.

Secondary stems probably elongated, incomplete in the type specimen, monophyllous. Leaf 4.8 cm. long, 1 cm. wide near the middle, narrowly elliptic-oblong, narrowed toward the ends, obscurely bidentate at the tip, obtuse,

coriaceous, about thrice shorter than the inflorescence. Peduncle with the raceme 15–18 cm. long, slender. Raceme 10–12 cm. long, loosely twenty or more flowered with a somewhat flexuose rachis. Flowers dark brown when dry, 5–9 mm. apart, distichous. Bracts of the raceme hardly 2 mm. long, infundibuliform. Lateral sepals about 2 mm. long, 3 mm. wide, suborbicular or transversely elliptical, minutely glandulose within, fleshy, 3-nerved. Dorsal sepal 3 mm. long, 3 mm. wide, broadly ovate, minutely glandulose within, 3-nerved, with the nerves slightly prominent. Petals about 1 mm. long, 1 mm. wide, flabelliform from a cuneate base, much thickened above the middle, below the middle concave or excavated, 3-nerved. Labellum much smaller than the petals, .75 mm. long, membranaceous below the middle, with the upper half conspicuously thickened, rounded and obtuse at the apex, with a prominent transverse callus at the middle. Callus triangular with a posterior prominence. Column dilated toward the summit.

Undoubtedly a close ally of *Stelis effusa* Schltr., from which it differs chiefly in having larger flowers and broader leaves. In *S. distantiflora* the rachis of the raceme is apparently stouter and the flowers farther apart than in *S. effusa*. When dry the flowers are deep reddish brown, but in living specimens they are probably purplish.

COSTA RICA. *C. H. Lankester s. n.* Received at the Royal Gardens, Kew, in 1923. (TYPE in Herb. Ames No. 26977. Duplicate from the type plant in Herb. Kew.)

***Stelis eximia* Ames sp. nov.** Radices valde fibratae, glabrae. Caules secundarii caespitiosi, vaginati, elongati. Folium anguste ellipticum, obtusum, apice inconspicue bilobulatum, coriaceum, in petiolum brevem contractum. Pedunculus cum racemo folio multo longior, multiflorus, bractea spathacea subtendenti. Bracteae racemi oblique infundibuliformes, pedicello breviores. Pedicellus cum ovario ascendens. Sepala lateralia ovata, obtusa, quinquenervia. Sepalum dorsale simile. Petala cuneata, apice

truncata et valde incrassata, trincervia. Labellum quadratum, valde incrassatum, subtus rotundatum, apice minute apiculatum, apiculo erecto. Discus concavus, callo T-formi instructus. Columna supra medium dilatata.

Roots coarsely fibrous, whitish, smooth. Secondary stems densely caespitose, up to 12 cm. long, clothed to about the middle with several tubular sheaths, monophyllous. Leaf 16.5 cm. long, 3.5 cm. wide at the middle, narrowly elliptical, obtuse, with the apex minutely bidentate, narrowed toward the base into a short petiole which is about 2 cm. long. Peduncle with the raceme 23 cm. long, subtended by a closely appressed spathaceous bract which is 1.9 cm. long. Raceme many-flowered. Bracts of the raceme about 3 mm. long, infundibuliform, much shorter than the pedicellate ovary, about 7 mm. apart between the points of insertion. Pedicel with the ovary about 6 mm. long. Lateral sepals about 6 mm. long, 5-5.5 mm. wide, broadly ovate, obtuse, 5-nerved, fleshy. Dorsal sepal 6 mm. long, 5 mm. wide, 5-nerved. Petals 1 mm. long, 1.25 mm. wide at the summit, cuneate, much thickened and truncate at the apex. Labellum 1 mm. long, 1 mm. wide, quadrate, truncate at the apex, rounded beneath, with a minute erect apiculate process on the anterior margin. Disc concave, with a T-form slightly raised callus. Column equaling the petals, dilated above the middle.

A close ally of *Stelis cascajalensis* Ames, from which it differs in the differently proportioned sepals and in the smaller flowers.

PANAMA, Province of Chiriqui, "Caramilla," C. W. Powell 312. Grows in moderate sunlight on fallen tree-trunks. Flowers greenish white, darker green at the margin. Petals and labellum shining chocolate brown. Flowers in July. (TYPE in Herb. Ames No. 26979.)

***Stelis propinqua* Ames sp. nov.** Caules secundarii verisimiliter caespitosi, elongati, vaginati, monophylli. Folium pedunculo multo brevius, anguste oblongo-ellipticum, obtusum, coriaceum. Pedunculus singulus, e bractea spathacea oriens. Racemus elongatus, gracilis, laxiflorus. Flores

sicei atropurpurei. Sepala lateralía late ovata, tri-vel quadrinervia, intus minute glandulosa. Sepalum dorsale simile, quinquenervium. Petala cuneata, trans apicem truneatum valde incrassata, trinervia. Labellum rhombicum, obtusum, valde incrassatum. Columna generis.

Secondary stems 3 em. or more long, partly coneealed by an elongated loosely appressed sheath, monophyllous. Leaf including the short petiole 8-10 em. long, 1.6 em. wide, elliptic-oblong, obtuse, coriaceous, much shorter than the raceme. Peduncle solitary in the axil of the leaf, emerging from a spathaceous braet, with the raceme 17-21 cm. long, slender. Raceme 11-13.5 cm. long, up to 18-flowered. Bracts of the raceme 1.5-2 mm. long, infundibuliform, with a wide mouth. Pedicels slender, with the ovary about 3 mm. long. Flowers about 7 mm. across, dark purple when dry, fleshy. Lateral sepals 3 mm. long, 4 mm. wide, broadly ovate, asymmetrical, 3-4-nerved, minutely glandular on the inner surface. Dorsal sepal 4.5 mm. long, 5 mm. wide below the middle, broadly ovate, 5-nerved, minutely glandular on the inner surface. Petals about 1 mm. long, 2 mm. wide across the truncate apex, cuneate, thickened across the tip, 3-nerved. Labellum .5-.75 mm. long, about 1 mm. wide, rhombic, obtuse, very fleshy, with the margins more or less thickened and erect. Column dilated upward.

Stelis propinqua is closely allied to *S. curvata* Sehltr., from which it differs in the larger flowers, and in the shape of the petals and labellum. *S. leucopogon* Reichb. f. is also closely allied, but has larger flowers in which the lateral sepals are distinctly 5-nerved, and the labellum different. In *Stelis propinqua* the lateral sepals are sometimes 3-nerved and 4-nerved in the same flower.

COSTA RICA, probably near Cachi, C. H. Lankester 468. (TYPE in Herb. Ames No. 26957.)

***Stelis vestita* Ames sp. nov.** Radices crasse fibratae, elongatae, glabrae, albidae. Rhizoma valde abbreviatum. Caules secundarii caespitosi, erecti, vaginis elongatis tubulatis laxè appressis omnino obtecti, monophylli. Vaginae in sicco plurisuleatae, brunneae, apice plus minusve truneatae.

Folium valde coriaceum, anguste oblongo-ellipticum, apice inaequaliter bilobatum, basi in petiolum gracilem contractum, pedunculo cum racemo multo brevius. Pedunculus singulus, valde elongatus, gracilis, e bractea spathacea oriens. Flores in racemo laxo dispositi. Bracteae racemi inaequaliter infundibuliformes, in sicco scariosae. Pedicelli graciles, bracteas subtendentes multo superantes. Sepala lateralalia late ovata, subacuta, trinervia, carnosa, intus conspicue glanduloso-pubescentia. Sepalum dorsale simile. Petala cuneato-flabellata, valde carnosa, trinervia. Labellum rhombicum, obtusum, valde incrassatum, infra medium glanduloso-pubescent, callo transverso in medio disci. Columna dilatata, apice trilobata.

Roots very coarsely fibrous, spreading, copious, whitish and smooth. Rhizome abbreviated. Secondary stems caespitose, erect, 4-6 cm. long, entirely concealed by ample tubular loosely appressed sheaths. Sheaths two, the upper one 3-4 cm. long, brownish when dry, reaching to the base of the petiole of the leaf, prominently nerved. Leaf with the petiole 6-9 cm. long, up to 2 cm. wide, narrowly oblong-elliptic, obtusely bilobulate at the tip, very coriaceous, much shorter than the inflorescence. Peduncle with the raceme 16-20 cm. long, emerging from a brownish spathaceous bract in the axil of the leaf. Raceme 8-12 cm. long, with a slender flexuose rachis. Flowers dull purple, about 5 mm. apart. Bracts of the raceme about 1.75 mm. long, unequally infundibuliform, shorter than the slender pedicels of the flowers. Lateral sepals about 2 mm. long, 2 mm. wide, broadly ovate, acute or subacute, densely glandular-pubescent on the inner surface, 3-nerved, very fleshy. Dorsal sepal 2 mm. long, similar to the laterals, densely glandular-pubescent within. Petals 1 mm. long, 1.5 mm. wide across the tip, very fleshy, cuneate-flabelliform, 3-nerved. Labellum 1 mm. long, 1 mm. wide, rhombic in outline, conspicuously thickened through the middle with the margins more or less hyaline. Disc glandular-pubescent on the basal half behind the transverse callus which extends forward almost to the apex of the labellum. Column fleshy, dilated upward, 3-lobed at the summit.

Stelis vestita is closely allied to *S. Endresii* Reicheb. f., from which it differs conspicuously in having much smaller flowers. From *S. glandulosa* Ames it differs in the shape of labellum, which is conspicuously glandular-pubescent on the basal half and in having much smaller flowers.

COSTA RICA, Zarcero, C. H. Lankester & Olón Jiménez 460, April 1923. Sepals dull purple, with a narrow hyaline margin. Leaves very thick and succulent. 6500 feet altitude. (TYPE in Herb. Ames No. 26959.)

Pleurothallis dichotoma Ames *sp. nov.* Radices fibratae, albiae, glabrae. Rhizoma abbreviatum. Caules secundarii dense caespitiosi, valde abbreviati, vaginis paucis scariosis vestiti. Folium oblanceolatum, bene marginatum, apice bidenticulatum apiculo interjecto, in petiolum angustatum contractum. Pedunculus cum racemo folia multo excedens, valde gracilis. Inflorescentia laxe dichotoma, plus minusve quinqueflora. Bractee inflorescentiae infundibuliformes, acutae, scariosae, pedicellis breviores. Sepala lateralibus vix usque ad medium cohaerentia, purpurea, lanceolata, in caudam filiformem flavidam producta, binervia, extus per medium carinata. Sepalum dorsale simile, purpureo-striatum, trinervium nervis extus prominentibus, basi valde concavum. Petala lanceolata, bene purpureo-fimbriata, in apicem filiformem producta, uninervia. Labellum subsagittatum, valde obtusum, supra medium glandulosum, margine glanduloso-fimbriatum, subtus prope basim valde carinatum, callosum. Columna brevis.

Roots fibrous, whitish, smooth. Rhizome abbreviated. Secondary stems densely caespitose, about 4 mm. long, concealed by about two scarious tubular sheaths. Leaf oblanceolate, 1.3–2.4 cm. long, up to 4 mm. wide above the middle, marginate, bidentulate at the apex with an apicule between the teeth, contracted below into a slender petiole. Peduncle with the raceme up to 6 cm. long, slender, thread-like. Inflorescence about 2.5 cm. long, dichotomous, loose, about 5-flowered. Lateral sepals coherent hardly to the middle, 8 mm. long, 1 mm. wide below the middle, lanceolate, with the apex slenderly caudate and about 4 mm.

long, 2-nerved, with the central nerve externally thickened, maroon-purple with the tails yellowish. Dorsal sepal 8 mm. long, lanceolate, tricarinate on the outer surface, produced at the apex into an elongated slender tail which is 4 mm. long, 3-nerved, with the nerves purplish. Petals 3 mm. long, about 1 mm. wide, with the margin conspicuously and irregularly fimbriate, — the segments of the fringe commonly bifurcate and purplish, — 1-nerved with the nerve thickened. Labellum about 2 mm. long, subsagittate, very obtuse, deep maroon-purple, densely and shortly glandulose above the middle with the margin glandular-fimbriate, strongly and deeply keeled beneath the base with the keel shortly fringed. Disc ecallose. Column fleshy.

Allied to *Pleurothallis hastata* Ames, but with the sepals long-caudate and the labellum quite different.

COSTA RICA, Peralta, C. H. *Lankester* 464, July 13, 1923. 1200 feet altitude. (TYPE in Herb. Ames No. 27014.)

***Pleurothallis geminicaulina* Ames sp. nov.** Rhizoma elongatum. Caules secundarii inter se satis distantes, elongati, prope basim vaginati, monophylli. Folium valde coriaceum, oblongo-ellipticum, apice bidentatum, epetiolatum, in sicco valde rugosum. Pedunculi fasciculati, pauciflori, basi vaginati, folio multo breviores. Flores purpurei. Sepala lateralia paene usque ad apicem cohaerentia, laminam ellipticam formantia, extus bicarinata, dense glandulosa. Sepalum dorsale anguste oblongum, acutum, extus dense glandulosum. Petala lanceolata, acuta, margine bene fimbriata, nervo incrassato per medium. Labellum oblongum, carnosum, abrupte acutum, bicarinatum. Columna utrinque apice minute dentata.

Rhizome rigid, elongated, about 4 mm. in diameter. Secondary stems 3–8 cm. long, 1–2 cm. apart, sometimes in pairs, when immature clothed with several tubular scarious sheaths, monophyllous. Leaf 5–6 cm. long, up to 2 cm. wide, oblong-elliptic, bidentate at the apex, conspicuously rugose when dry, thickly coriaceous, sessile. Peduncles fasciculate, few, in the axils of the leaves, 2.5–3 cm. long, subtended by a spathaceous bract which is about 1 cm. long.

Raceme about 1.5 cm. long, about 4-flowered, hardly reaching to the middle of the leaf. Bracts of the raceme obliquely infundibuliform. Ovary densely glandulose. Lateral sepals 9 mm. long, narrowly lanceolate, acute, with the tip carinate-thickened, densely and shortly glandulose on the outer surface, coherent almost to the apex, forming an elliptical lamina, lightly carinate on the outer surface along the middle. Dorsal sepal 9-10 mm. long, about 2 mm. wide, narrowly oblong, acute, densely and shortly glandulose on the outer surface, margin somewhat involute. Petals about 6 mm. long, 2 mm. wide, lanceolate, acuminate, drawn out into a slender, acute point, margin irregularly fimbriate, 1-nerved, with the nerve somewhat thickened. Labellum 3 mm. long, 1 mm. wide, broadly unguiculate, oblong, abruptly acute, somewhat constricted near the base when in natural position, strongly bicarinate on the upper surface, 3-nerved. Column 3 mm. long, with a minute tooth on each side at the summit.

In general habit suggesting *Pleurothallis Pantasmi* Reichb. f., which is a much stouter plant with winged secondary stems.

COSTA RICA, La Union, Turrialba, C. H. Lankester 454, May 12, 1923. Leaves dull purplish. Flowers purplish. Upper sepal striate. A widely distributed, but not common species. About 3500 feet altitude. (TYPE in Herb. Ames No. 27013.)

***Pleurothallis glandulosa* Ames sp. nov.** Herba epiphytica, pusilla, radicibus fibratis. Caules secundarii caespitiosi, abbreviati, monophylli. Folium lineari-oblongum, obtusum, in sicco nervo medio subtus valde prominenti. Pedunculus folio longior, gracilis, uniflorus, dense glanduloso-pubescent. Flos subrubens. Sepala lateralia infra medium cohaerentia, lineari-lanceolata, acuta, extus per medium carinata, glandulosa. Sepalum dorsale simile. Petala a basi cuneata dilatata, apice acuta. Labellum unguiculatum, supra basim leviter cordatum; lamina supra basim pandurata, obtusa, margine minute glandulosa. Columna elongata, apice in steldia duo producta.

An epiphytic caespitose herb with slender fibrous roots. Secondary stems crowded, about 5 mm. long, slender, sulcate when dry, monophyllous. Leaf 1.8–2.1 cm. long, 1.5–2 mm. wide, linear-oblong, obtuse, with the mid-nerve very prominent in dried specimens. Peduncle 1-flowered, about 3.5 cm. long, copiously glandular-pubescent, with a closely appressed tubular sheath near the middle. Pedicel and ovary glandular, about 4 mm. long, subtended by an infundibuliform, glandular sheath. Flower Pompeian red (*Ridgway*), 7 mm. long. Lateral sepals 8 mm. long, about 1 mm. wide near the middle, united below the middle, linear-lanceolate, with the margin glandular, acute, strongly carinate on the outer surface along the mid-nerve with the carinae distinctly glandular on the edge. Dorsal sepal about 8 mm. long, 1.5 mm. wide near the middle, narrowly lanceolate, acute, strongly concave near the base, glandular on the outer surface and along the margin. Petals 3 mm. long, 1.5 mm. wide above the middle, dilated upward from an oblong-cuneate base, rounded in front below the apex and abruptly contracted into the acute tip (subdolabriform), 2-nerved. Labellum 3.5 mm. long, about 1 mm. wide, unguiculate; lamina subpandurate from a cordate or somewhat sagittate base, obtuse, slightly glandular on the margin and upper surface, ecallose, 3-nerved. Column 2 mm. long, rather slender, bicuspidate in front at the summit.

Pleurothallis glandulosa is closely allied with *P. pyrsodes* Reichb. f., from which it differs conspicuously in the shape of the leaves and in the densely pubescent peduncle and ovary. *P. Dussii* Cogn. is similar in habit, but quite different in having the peduncle subequal to the leaves and in its very different petals.

PANAMA, Juna Grande range, *C. W. Powell* 306. Flowers in June. Grows on limbs of trees. Sea-level. (TYPE in Herb. Ames No. 26881.)

Pleurothallis gnomonifera Ames sp. nov. Herba epiphytica, caespitosa. Caules secundarii vaginis foliorum omnino obtecti. Vaginae foliorum prope apicem valde dilatatae, in laminam ovatam expansae, margine hispidulae,

infra laminam arcte appressae et ciliatae. Folium anguste ellipticum, subacutum, coriaceum. Pedunculi fasciculati, folio multo breviores, plus minusve quadriflori, paucibracteati. Flores in racemo abbreviato approximati, minute glandulosi. Bracteae flores subtendentes scariosae, infundibuliformes. Sepala lateralialia usque ad medium cohaerentia, elliptico-oblonga, obtusa, extus glandulosa, carinosa, leviter concava. Sepalum dorsale oblongo-ovatum, acutum, uninervium, extus minute glandulosum. Petala oblonga, supra medium bene ciliata, sepalis multo breviora, membranacea. Labellum breviter unguiculatum, oblongum, basi subsagittatum, margine supra medium labelli valde deflexa, breviter ciliata. Discus glaber, carina gnomoniformi ornatus. Columna elongata, apice bicuspidata.

Epiphytic herb about 12 cm. tall. Secondary stems up to 8 cm. long, wholly concealed by closely appressed hispid sheaths which become dilated into ovate acute marginate hispid spreading laminae, monophyllous. Leaf narrowly elliptical, about 4.5 cm. long, 1.7 cm. wide, narrowed at both ends, subacute. Peduncles including the few-flowered raceme up to 2 cm. long, fasciculate in the axil of the leaf. Flowers minutely glandular, with olive green sepals and red petals, approximate. Bracts of the inflorescence infundibuliform, scarious. Lateral sepals 3 mm. long, hardly 1 mm. wide, united up to the middle, elliptic-oblong, obtuse, densely glandular on the outer surface, rather fleshy above the middle, slightly concave. Dorsal sepal 2 mm. long, 1 mm. wide near the middle, ovate-oblong, acute, glandular on the margin and outer surface, 1-nerved, membranaceous. Petals about 1.25 mm. long, oblong, ciliate-fringed above the middle, without conspicuous neuration. Labellum 1.5 mm. long, less than 1 mm. wide, shortly unguiculate; lamina narrowly oblong, obtuse, with the margin of the apical half sharply deflexed and minutely glandular, basal portion subsagittate. Disc smooth, with a gnomon-like keel extending from the base to about the middle, where it becomes dilated. Column 1.5 mm. long, with a stelidium on each side at the summit in front.

Closely allied to *Pleurothallis Purpusii* Schltr., from which it differs conspicuously in the broader leaves and hispid cauline sheaths. It is a member of the *Lepanthiiformes* section of the genus.

PANAMA, Province of Chiriqui, "Cerro Norquita," C. W. Powell 311. Grows in damp, shady places. Flowers in June. 5000-6000 feet altitude. (TYPE in Herb. Ames No. 26928.)

***Pleurothallis monstrabilis* Ames sp. nov.** Rhizoma longe repens, vaginis scariosis tubulatis instructum. Radices elongatae, fibratae, glabrae, patentés. Caules secundarii valde abbreviati, bractea vaginanti obtecti, monophylli. Folium anguste lanceolatum, apice bidentatum, apiculatum, valde carnosum, subtus rotundatum, supra late sulcatum. Pedunculus folio longior, gracilis, uniflorus, ex axilla folii oriens, bractea spathacea arcte appressa subtentus, supra basim bractea infundibuliformi. Sepala lateralia anguste lanceolata, acuminata, apice subcaudata et valde incrassata, plus minusve cohaerentia, trinervia. Sepalum dorsale simile sed angustius, apice subcaudatum et incrassatum, basi concavum. Petala lineari-lanceolata, supra medium incrassata, margine obscure cellulari-glandulosa, uninervia. Labellum oblongo-lanceolatum, acutum, a latere visum leviter sigmoideum, trinervium, prope basim bicarinatum, callo obtuse triangulari prope medium instructum. Columna carnosae, clinandrio integro.

Roots up to 17 cm. long, fibrous, whitish, smooth, spreading. Rhizome elongated, creeping, 1 mm. thick, green, clothed with rather closely appressed scarious bracts. Secondary stems much abbreviated, 4 mm. long, about 1.5 mm. in diameter, approximate, arising in succession from the upper side of the rhizome, monophyllous, concealed by an ample scarious sheath. Leaf 2-2.5 cm. long, 3-4 mm. wide, narrowly lanceolate, bidentate at the tip, conspicuously apiculate, rounded beneath, widely sulcate above, very fleshy. Peduncle up to 3.5 cm. long, with a closely appressed sheath at the base and with an infundibuliform bract above the base. Pedicel with the ovary about 4 mm.

long, subtended by a cucullate acute bract which is 4 mm. long and tubular at the base. Flowers stramineous, conspicuous. Lateral sepals 1.2 cm. long, 2 mm. wide above the base, narrowly triangular-lanceolate, terminating in a thickened subcaudate tip, 3-nerved, coherent, becoming free almost to the base. Dorsal sepal 1.2 cm. long, 1.5 mm. wide, narrowly lanceolate, 3-nerved, thickened toward the tip, subcaudate. Petals 6 mm. long, about 1 mm. wide near the base, linear-lanceolate, 1-nerved, thickened toward the apex, margin inconspicuously cellular-glandulose. Labellum 2.5 mm. long, 1 mm. wide, oblong-lanceolate, acute, somewhat sigmoid when seen from the side, 3-nerved. Disc bicarinate near the base, the keels prominent and converging above; near the middle of the disc there is a thickened callus, obtusely triangular in outline, with its apex pointing toward the tip of the labellum. Column 2 mm. long, very fleshy, with a cucullate entire clinandrium.

In habit this species suggests *Pleurothallis repens* Ames, but is quite distinct from it in the structure of the flower.

COSTA RICA, Vicinity of La Palma, on the road to La Hondura; William R. Maxon & Alfred D. Harvey 8096, July 17-18, 1923. 1500-1700 meters altitude. (TYPE in U. S. Nat. Herb. No. 1180040. DUPLICATE TYPE in Herb. Ames No. 26989.)

***Pleurothallis peperomioides* Ames sp. nov.** Rhizoma repens. Caules secundarii valde abbreviati, alterni, monophylli. Folium carnosum, orbiculare. Pedunculus abbreviatus, glandulosus, folio multo brevior. Flos glandulosus. Sepala lateralia anguste elliptica, paene usque ad apicem cohaerentia, concava, extus glandulosa. Sepalum dorsale sepalis lateralibus breviter connatum, elliptico-ovatum, valde concavum, extus glandulosum. Petala oblonga, acuta, trinervia, intus minute glandulosa. Labellum oblongum, subacutum, intus glandulosum. Columna gracilis, apice denticulata.

Roots abbreviated, up to 5 mm. long, smooth. Rhizome elongated, creeping, sometimes branched, densely glandular-pubescent. Secondary stems about 2 mm. long, glandular-

pubescent, borne alternately on the rhizome, monophyllous. Leaf very fleshy, 6 mm. long more or less, 4-5 mm. wide, elliptical or orbicular, rugulose, approximate. Flowers solitary. Peduncle about 3 mm. long, densely glandular-pubescent, apparently arising from the rhizome at the base of a secondary stem. Lateral sepals about 6 mm. long, 2 mm. wide, narrowly elliptical, cohering almost to the apex, strongly concave, glandular-pubescent on the outer surface, obtuse. Dorsal sepal 5 mm. long, about 3 mm. wide near the middle, elliptic-ovate, subacute, 3-nerved, densely glandular-pubescent on the outer surface. Petals 4 mm. long, 1 mm. wide, oblong, acute, 3-nerved, somewhat glandular on the inner surface of the upper half. Labellum simple, 4 mm. long, 1.25 mm. wide above the middle, oblong, slightly dilated near the tip, rounded at the apex into a blunt point, smooth beneath, densely glandular above and on the margin, with the glandular excrescences directed forward. Column 3.5 mm. long, slender, toothed at the summit.

A close ally of the Cuban *Pleurothallis nummularia* Reichb. f., which is in part distinguished by the longer, more slender peduncles.

COSTA RICA, Peralta, C. H. *Lankester* 465. Sepals villose, hyaline, pale yellowish stained with purple; petals pale yellowish; lateral sepals and labellum interiorly blotched with deep maroon. Column pale green-yellow. Leaves dull yellow-green. (TYPE in Herb. Ames No. 26929.)

***Pleurothallis peraltensis* Ames sp. nov.** Rhizoma valde abbreviatum. Caules secundarii caespitosi, erecti, vaginis hispidulis omnino obtekti. Vaginae elongatae, tubulatae, in apicem dilatatum ovato-lanceolatum hispidulum productae. Folium elliptico-lanceolatum, apice bidentatum, racemo multo longius. Pedunculi fasciculati, ex axilla foliorum orientes. Racemus pauciflorus. Sepala lateralia vix usque ad medium cohaerentia, ligulata, carnosae, obtusae vel subacutae, extus per medium carinatae, margine bene ciliatae, trinerviae. Sepalum dorsale lanceolatum, valde concavum, margine ciliatum. Petala oblonga, usque ad basim leviter attenuata, valde membranacea, margine inaequaliter

fimbriata. Labellum oblongo-panduratum, trinervium, supra medium spatulatum, prope apicem glandulosum, basi cordata auriculis incurvis, margine ciliata. Discus callo transverso prope basim labelli ornatus. Columna superne dilatata, apice fimbriata.

Roots coarsely fibrous, whitish. Rhizome abbreviated. Secondary stems 5–10 cm. long, 1–2 mm. in diameter, erect, entirely concealed by tubular closely appressed sheaths. Sheaths 1.3–2.5 cm. long, hispidulous along the nerves, dilated above, forming a lamina which is 7–11 mm. long ovate-lanceolate in outline, with the margin hispidulous. Leaf 4–6 cm. long, 1.2–1.5 cm. wide, elliptic-lanceolate, attenuated toward the ends, bidentate at the apex, coriaceous, marginate. Peduncles fasciculate in the axil of the leaf, enclosed at base by a spathaceous bract which is 1–1.5 cm. long. Raceme with the peduncle 1.5–3 cm. long, much shorter than the leaf, few-flowered. Bracts of the inflorescence about 1 mm. long, infundibuliform. Lateral sepals 4.5 mm. long, about 1 mm. wide near the middle, ligulate, somewhat narrowed toward the obtuse or subacute apex, united almost to the middle, lightly carinate on the outer surface along the mid-nerve, margin ciliate. Dorsal sepal 4.5–5 mm. long, narrowly lanceolate, acute, strongly concave, margin ciliate. Petals 2 mm. long, about .75 mm. wide, oblong, slightly dilated upward, unequally and deeply fringed on the margin, especially so above the middle. Labellum 3 mm. long, 1 mm. wide near the tip, 3-nerved, margin ciliate, oblong-pandurate, the apical half more or less spatulate in outline, minutely glandulose, obtuse, the base cordate with the minute obtuse auricles incurved. Disc with a transverse callus which is prominently thickened at the middle near the base of the labellum. Column 2 mm. long, dilated upward, deeply and unequally fringed.

Pleurothallis peraltensis is a close ally of *P. Purpusii* Schltr., from which it differs in the broader leaves, larger flowers and in the structure of the labellum. *P. gnomonifera* Ames is also a close ally, but is quite different in having smaller flowers and a differently shaped labellum.

COSTA RICA, Peralta, C. H. *Lankester* 484, July 13, 1923. Leaves dull purplish beneath. Sepals and labellum dark maroon, the upper sepal paler than the laterals. Petals hyaline faintly tipped with purple. 2500 feet altitude. (TYPE in Herb. Ames No. 26973.)

Pleurothallis peregrina Ames sp. nov. Radices fibratae, glabrae. Caules secundarii caespitosi, elongati, vaginis tubulatis arete appressis vestiti. Folium elliptico-oblongum, apice valde obtusum. Pedunculi fasciculati, folium superantes, racemo multifloro. Sepala lateralia usque ad basim libera, anguste lanceolata, intus glandulosa, apice incrassata. Sepalum dorsale simile, apice triquetrum. Petala oblonga, obtusa, leviter concava, nervo medio extus per medium prominenti. Labellum breviter unguiculatum, infra medium valde incrassatum, supra medium in laminam suborbicularem expansum, trinervium, nervis lateralibus in carinas elevatas productis, nervo medio leviter prominenti. Columna gracilis, apice minute dentata.

Roots elongated, branching, smooth, whitish. Rhizome abbreviated. Secondary stems densely caespitose, 10–17 cm. long, slender, at the base about 2 mm. in diameter, erect, provided with several elongated tubular closely appressed brownish sheaths, monophyllous. Leaf petiolate; petiole 1.5–2 cm. long, slender, sulcate above; lamina 6–8 cm. long, 2–3 cm. wide, elliptic-oblong, rounded at the tip, inconspicuously apiculate, rigid. Peduncles fasciculate in the axil of the leaf, arising from a short spathaceous bract which is 1 cm. long, floriferous almost to the base. Raceme including the peduncle 10–14 cm. long, about twice longer than the leaf. Bracts of the raceme tubular, scarious, 3–4 mm. long. Pedicels with the ovary 5 mm. long, smooth. Lateral sepals 1.1–1.5 cm. long, about 3 mm. wide below the middle, narrowly lanceolate, acuminate, acute, 3-nerved, free to the base, glandular on the inner surface. Dorsal sepal similar to the laterals, triquetrously thickened near the tip, 3-nerved. Petals 4–4.5 mm. long, 2 mm. wide, oblong or slightly dilated upward, rounded at the tip, with the mid-nerve prominent on the outer surface. Labellum 5 mm. long, 1 mm.

wide above the base, 2.25 mm. wide above the middle, shortly unguiculate, conspicuously 3-nerved, basal half much thickened, oblong, with a deep keel on each lateral nerve, upper half of the labellum suborbicular, with three raised nerves which converge toward the tip. Column 3 mm. long, rather slender, with the clinandrium inconspicuously dentate.

Pleurothallis peregrina is closely allied to *P. dolichopus* Schltr., from which it differs chiefly in the form of the labellum.

COSTA RICA, Jucosal (?) Purchased in Cartago from a native, C. H. Lankester 469, June 30, 1923. Flowers oil-green, semitranslucent, sepals lightly hairy, petals and column with a central purple line; base of lip with three purple striae. (TYPE in Herb. Ames No. 26956): along the cart-road from Vara Blanca (between Poás and Barba volcanoes) to La Concordia, William R. Maxon & Alfred D. Harvey 8492, July 23, 1923. Mossy tree trunk. Basal half of labellum purplish. 1600–1950 meters altitude.

***Pleurothallis propinqua* Ames sp. nov.** Caules dense caespitosi, abbreviati, monophylli. Folium oblanceolatum vel spatulatum, apice bilobatum apiculo brevi interjeeto. Pedunculus cum racemo folium aequans vel breviter superans, pauciflorus. Sepala lateralia lanceolata, acuminata, acutissima, uninervia, extus per medium carinata. Sepalum dorsale simile. Petala lanceolata, sepalis lateralibus angustiora, acuminata, acutissima, uninervia. Labellum lanceolatum, plus minusve incrassatum, acuminatum, acutissimum, trinervium, callo transverso prope basim ornatum. Columna brevis.

Roots fibrous, smooth. Secondary stems densely caespitose, 4–5 mm. long, concealed at the base by a tubular scariosus sheath, monophyllous. Leaf with the petiole 1.3–2 cm. long; lamina 2.5–5 mm. wide above the middle, oblanceolate or spatulate, bilobulate at the apex with a short apicule between the lobes, coriaceous. Peduncle with the raceme up to 3.5 cm. long, slender, with a closely appressed tubular bract near the middle. Raceme 3–6-flowered;

rachis 5 mm. long. Bracts of the raceme shorter than the pedicels. Flowers dark purplish magenta. Pedicel with the ovary about 1.5 mm. long. Lateral sepals 4.75–5 mm. long, 2 mm. wide, lanceolate, acuminate, drawn out into a slender acute tip, free almost to the base, 1-nerved, carinate along the middle of the dorsal surface. Dorsal sepal similar, 5 mm. long. Petals about 4.5 mm. long, 1 mm. wide, lanceolate, acuminate, drawn out into a slender acute tip, 1-nerved. Labellum 4 mm. long, about 2 mm. wide below the middle, rather fleshy, lanceolate, acuminate, drawn out into a slender acute tip, 3-nerved, with the lateral nerves hardly reaching to the middle of the disc, the middle nerve about twice longer. Disc with a slightly thickened transverse callus which is 1 mm. from the base of the labellum. Column 1 mm. long, abbreviated, entire at the summit.

A close ally of *Pleurothallis Schulzeana* Schltr., from which it differs in the larger flowers with broader floral segments. In *P. Schulzeana* the petals are linear rather than lanceolate, and only 2.75 mm. long. *P. lancilabris* (Reichb. f.) Schltr. is another close ally of *P. propinqua*, but differs from it in having much smaller flowers.

COSTA RICA, Vara Blanca, between Poás and Barba volcaneoes, William R. Maxon & Alfred D. Harvey 8268, July 22, 1923. Flower dark purplish-magenta. On mossy tree trunk. (TYPE in U. S. Nat. Herb. No. 1180073. DUPLICATE TYPE in Herb. Ames No. 27012.)

***Pleurothallis vinacea* Amcs sp. nov.** Caules secundarii verisimiliter elongati, monophylli. Folium anguste oblanceolatum, obtusum, pedunculo eum racemo brevius. Pedunculus gracilis, infra racemum vaginis tubulatis vestitus. Racemus secundiflorus, leviter flexuosus, bracteis flores subtendentibus oblique infundibuliformibus acutis. Pedicellus cum ovario glaber. Sepala lateralia usque ad medium cohaerentia, anguste lanceolata, extus per medium valde carinata, acuta, intus prope marginem anteriorem longe pilosa, prope marginem posteriorem minute glandulosa. Sepalum dorsale anguste lanceolatum, infra medium plus minusve concavum, extus per medium valde carinatum,

intus sparse et longe pilosum. Petala oblonga, usque ad apicem acutum attenuata, carnosa, glabra, atropurpurea. Labellum trilobatum; lobi laterales falcati, porrecti, acuti, basi rotundati, dense glandulosi, vinacei; lobus medius spathulatus, obtusus, infra medium tricarinalus, carinis lateralibus valde prominentibus, margine minute fimbriata. Discus prope basim labelli bicallosus. Columna petalis brevior, apice inaequaliter fimbriata.

Roots and secondary stems wanting. Leaf 8.2 cm. long, 9 mm. wide near the middle, narrowly oblanceolate, obtuse, coriaceous, mid-nerve prominent. Peduncle with the raceme 14 cm. long, slender, arising from the axil of the leaf, provided with several closely appressed tubular sheaths. Raceme 4–6 cm. long, exceeding the leaf, seven to fourteen or more flowered, secund, with the rachis slender and slightly flexuose. Bracts of the raceme 5 mm. apart between the points of insertion, about 5 mm. long, obliquely infundibuliform, drawn out into an acute tip. Pedicel and ovary 6 mm. long, smooth, green. Lateral sepals 9 mm. long, 1.75 mm. wide near the middle, narrowly lanceolate, coherent for about one half their length, acute, conspicuously and sharply carinate along the middle on the outer surface, the keels continued at the apex into a rostrate point, upper surface on and near the outer margin sparsely pilose, inner margin more or less minutely glandulose. Dorsal sepal about 9 mm. long, narrowly lanceolate, distinctly carinate along the middle of the outer surface, acute, strongly concave, with the margin sparsely pilose. Petals 5 mm. long, 1.5 mm. wide, oblong, acuminate, acute, smooth, vinaceous, with the middle nerve conspicuous. Labellum 5 mm. long, 3-lobed, vinaceous; lateral lobes 2 mm. long, narrowly falcate from a broad, rounded base, acute, minutely glandulose; middle lobe 3 mm. long, 1.5 mm. wide above the middle, spatulate, very shortly fimbriate on the margin, 3-carinate to about the middle, with the lateral keels shorter and more prominent than the middle one. Disc conspicuously bicallose near the base of the labellum. Column 3 mm. long, vinaceous, shortly ragged-fringed at the summit.

Closely allied to *Pleurothallis Wercklei* Schltr., from which it differs in having a tricarinate labellum with different lobes, and in the lateral sepals being long-acuminate. In dried specimens the lateral sepals are yellowish-green tinged with purple. The dorsal sepal, petals, lip and column are of a deep port wine color.

COSTA RICA, C. H. Lankester s. n. Received at the Royal Gardens, Kew, in 1923. (TYPE in Herb. Ames No. 26976. Duplicate from the type plant in Herb. Kew.)

Epidendrum exasperatum Reichb. f. Beitr. Orch. Centr. Am. (1866) 85.

This remarkable species, which is characterized by lateral and terminal racemes, is usually represented in herbaria by specimens that fail to give an idea of the plant as it occurs under natural and favorable conditions. From Mr. C. H. Lankester I have recently received specimens accompanied by the following note: "One of the commonest species at moist, high elevations, on nearly every fence post. Nom, vern, Estrella de Mar. Petals and sepals Hay's brown (Ridgway Pl. XXXIX), usually with a yellowish margin, especially the tip of the petals. Column, side and front lobes of lip, white, base of column, interior of side lobes at base, and basal half of the center of the lip light Perilla purple (Pl. XXXVI). As the flowers age, all white segments turn mustard yellow (Pl. XVI). In favorable situations the plant attains heroic dimensions, with a central stem up to ten feet in height, and three quarters of an inch in diameter, possibly much branched."

Specimens prepared for the herbarium rarely exceed three or four decimeters in height. It is such species as *E. exasperatum* which indicate the necessity for full field notes.

COSTA RICA, La Estrella de Cartago, C. H. Lankester 405, January 12, 1923.

Epidendrum pudicum Ames sp. nov. Herba tenera, plus minusve stricta, radicebus fibratis glabris instructa. Caules graciles, vaginis foliorum omnino obteeti. Folia

disticha, oblique ascendentia, anguste oblonga, plus minusve decem, supra profunde concava vel late sulcata, subtus rotunda, apice obtusa, valde carnosa, vaginis complanatis elongatis arete appressis articulata, in sicco valde conduplicata ut videtur. Flores subumbellati, in speciminibus nostris duo, longipedicellati, albidii, pedicellis cum ovario folium subtendens superantibus. Bracteae flores subtendentes valde abbreviatae, in sicco albiae, membranaceae, concavae, ovatae. Pedicellus valde gracilis, elongatus. Sepala lateralialia oblanceolata, acuta, apice leviter incrassata et bene triquetra, trinervia, nervo medio in sicco subtus prominenti. Sepalum dorsale anguste oblanceolatum, acutum, trinervium, apice incrassatum. Petala linearispathulata, acuta, uninervia nervo subtus prominenti. Labellum reniforme vel subaequaliter trilobatum, basi cordatum; lobis lateralibus suborbicularibus; lobo medio rotundato-triangulari, apice breviter apiculato. Discus prope basim labelli bicallosus, callis papilliformibus obtusis. Columna gracilis, usque ad apicem labello adnata, apice inaequaliter fimbriata. Anthera minute et dense glandulosa.

Roots fibrous, smooth. Stems up to 16 cm. long, approximate, erect, slender, terete at base, somewhat complanate above, wholly concealed by the leaf sheaths, about 10-leaved in flowering specimens. Leaves distichous, about 2.5 cm. long, 3 mm. wide, narrowly oblong, obtuse, sometimes obscurely bilobed at the tip, rounded beneath, deeply concave above, obliquely ascending, rigid, jointed to complanate sheaths which are about 1.5 cm. long, and nigro-annulate at the base. Inflorescence terminal, subumbellate, few-flowered (2-flowered in the type). Floral bracts minute, about 3 mm. long, scarious, concave, acute. Pedicel with the ovary about 2 cm. long, very slender, ascending, hardly 1 mm. in diameter, smooth. Lateral sepals 1 cm. long, 3 mm. wide above the middle, oblanceolate, acute, fleshy, triquetrously thickened at the apex, mid-nerve somewhat prominent beneath in dried specimens. Dorsal sepal 1 cm. long, similar to the laterals, triquetrously thickened at the apex. Petals 9 mm. long, 1 mm. wide above the middle, linear-spatulate, acute, 1-nerved. Labellum adnate to the column,

Fig. 10



free portion about 5 mm. long, 7 mm. wide, rather fleshy, subequally 3-lobed, with a cordate or reniform base; lateral lobes suborbicular, about 3 mm. wide, obliquely ascending; middle lobe 3 mm. wide at the base, somewhat triangular, acute, with the apex triquetrously thickened and apiculate; mid-nerve slightly thickened and prominent on the upper surface of the disc. Disc bicallose at the base near the apex of the column, the calli divergent and more or less papilliform, obtuse. Column 7.5 mm. long, produced posteriorly into a fimbriate-dentate membrane which covers the anther. Anther minutely and densely glandular. [Fig. 10.]

Epidendrum pudicum is closely allied with *E. firmum* Reichb. f., from which it differs in having smaller flowers and a very different labellum. It is a member of the group to which *E. difforme* Jacq. belongs.

PANAMA, Province of Chiriqui, "Palo alto," C. W. Powell 319. Flowered under cultivation at Balboa in August 1923. Flowers waxy white with a faint tinge of green. Bright green where the labellum joins the column. Grows in medium sun in open places. (TYPE in Herb. Ames No. 26876.)

Epidendrum rugosum Ames sp. nov. Herba epiphytica, ramosa. Caules vaginis tubulatis pustuloso-rugosis obtecti. Folia valde coriacea, oblonga, apice bilobulata. Flores albidi, usque ad tres. Sepala lateralia triangulari-lanceolata, acuta, carinata, carina ultra apicem extensa. Sepalum dorsale oblongum, usque ad apicem attenuatum, leviter carinatum. Petala anguste triangulari-lanceolata, acuta, trinervia. Labellum triangulare, acuminatum, acutum, basi concavum, columnae adhaerens, valde carnosum, quinquenervium. Columna carnosae, truncata.

Stems much branched, with the branches 1-3 cm. long, concealed by tubular sheaths which are rigid and pustulose-wrinkled. Leaves about 2 cm. long, 4-7 mm. wide, oblong, bilobulate at the tip, very coriaceous, jointed with the rugulose sheaths. Flowers terminal, several, whitish. Lateral sepals 7 mm. long, 2.25 mm. wide below the middle, triangular-lanceolate, somewhat rounded at the base, acumi-

nate, acute, carinate along the middle on the outside, with the keel prominent, decurrent on the ovary and continued above beyond the apex of the sepal. Dorsal sepal 7 mm. long, 2 mm. wide, oblong, gradually tapering to an acute tip, carinate. Petals 6 mm. long, about 1 mm. wide, narrowly triangular-lanceolate, acute, 3-nerved. Labellum including the adherent base 6 mm. long, free portion 4 mm. long, about 2.5 mm. wide, triangular, acuminate, acute, very fleshy, rounded at the basal angles, 5-nerved. Column 3 mm. long, very stout, truncate at the tip, adherent almost to its tip with the base of the labellum.

Closely allied to *Epidendrum trachythecae* Schltr., which has a very different labellum.

COSTA RICA, *C. II. Lankesteri* s. n. Received at the Royal Gardens, Kew, in 1923. (TYPE in Herb. Ames No. 26978. Duplicate from type plant in Herb. Kew.)

Epidendrum simulacrum Ames sp. nov. Caules erecti, vaginis foliorum omnino obtecti. Folia disticha, inter se satis distantia, oblonga, utrinque leviter angustata, apice inaequaliter bilobata, coriacea, patentia. Inflorescentia terminalis, subumbellata, plus minusve quadriflora. Pedunculus abbreviatus. Bracteae inflorescentiae in sicco scariosae, pedicellis multo breviores. Sepala lateralibus plus minusve oblanceolata, acuta, apice valde incrassata, subtriquetra. Sepalum dorsale simile, apice valde incrassatum, subteres. Petala linearispathulata. Labellum simplex vel obscure et sparse crenulatum, cordatum, prope basim laminae bicallosum. Columna labello adnata, clinandrio minute dentato.

Stems 19-24 cm. tall, concealed by the sheaths of the distichous leaves, somewhat dilated upward. Leaves 2-2.5 cm. apart, 4 cm. long, 1 cm. wide, oblong, narrowed toward the ends, obtusely and unequally bilobed at the tip, spreading. Inflorescence terminal, subumbellate, few-flowered. Peduncle hardly 1 cm. long, with the rachis 6 mm. long. Flowers green, long-pedicellate, borne in umbel-like clusters. Pedicel with the ovary about 2 cm. long, slender. Lateral sepals 1 cm. long, 2.5 mm. wide above the middle, ob-

lanceolate, acute, with the apex thickened and more or less triquetrous. Dorsal sepal 1 cm. long, similar to the lateral sepals, strongly convex, with the apex thickened and somewhat semiterete. Petals 9 mm. long, about 1 mm. wide above the middle, linear-spatulate, 1-nerved. Labellum about 9 mm. long to the base of the column, free portion about 6 mm. long, 6 mm. wide, simple or widely and obscurely crenulate on the margin, cordate, apiculate, bicallose at the base. Column 6 mm. long, arcuate, wholly adnate to the labellum, minutely denticulate at the summit behind the anther.

Closely allied to *Epidendrum difforme* Jacq., from which it differs in the smaller flowers and different labellum. From *E. firmum* Reichb. f. it is clearly distinguished by the outline of the labellum.

PANAMA, Province of Chiriqui, "Lino hill," C. W. Powell 298. Flowering in May and June. Growing in exposed place. 4000-4500 feet altitude. (TYPE in Herb. Ames No. 26882.)

***Epidendrum vagans* Ames sp. nov.** Rhizoma longe repens, lignosum, validum, radicibus fibratis ramosis glabris. Pseudobulbi inter se distantes, tri-vel quadrifoliati. Folia coriacea, ligulata, apice inaequaliter bilobata. Pedunculus terminalis, foliis brevior, plus minusve quadriflorus. Flores in racemo laxo dispositi. Sepala lateralia anguste lanceolata, acuta, extus per medium conspicue et alte carinata. Sepalum dorsale simile, ecarinatum. Petala lanceolata, acuminata, acutissima. Labellum simplex, elliptico-ovatum, acuminatum, purpureo-striatum, callo velutino in basi. Columna apice dilatata, antice bidentata dentibus triangularibus, postice in ligulam producta. Ligula columnae anguste oblonga, apice obscure paucidenticulata.

Rhizome elongated, creeping, 5-6 mm. in diameter, provided between the distant pseudobulbs with two or three loosely appressed tubular sheaths, which soon disappear as the plants mature. Pseudobulbs 5-6 cm. apart, about 5 cm. long, fusiform, concealed when young by several rather closely appressed imbricating sheaths, 3-4-leaved. Leaves

8–10 cm. long, up to 1.6 cm. wide, oblong, abruptly narrowed at both ends, obtusely bilobulate at the tip, erect. Peduncle 4–5 cm. long, much exceeded by the leaves, about 4-flowered. Flowers in a loose raceme, white or cream color, the sepals and petals with a short median band of purple and the labellum with about twelve purple stripes. Bracts of the raceme about 4 mm. long. Pedicel with the ovary 1.7 cm. long, ascending. Lateral sepals 2 cm. long, 4 mm. wide, narrowly lanceolate, acute, with a deep keel along the middle on the outer surface. Dorsal sepal similar, cecarinate. Petals 1.7 cm. long, up to 5 mm. wide, lanceolate, acuminate, acute. Labellum 1.5 cm. long, about 7 mm. wide below the middle, elliptic-ovate, acuminate, acute, lightly and shortly carinate on the under side near the tip. Callus velutinous, situated at the base of the lamina, obscurely 3-lobulate in front. Column 5.5 mm. long, adherent for about one half its length to the labellum, dilated upward, with a fleshy, triangular tooth on each side in front at the summit, and with an oblong obscurely tridenticulate ligule behind the anther.

Epidendrum vagans is closely allied to *E. radiatum* Lindl. and *E. ionophlebium* Reichb. f. From *E. radiatum* it differs conspicuously in the outline of the labellum and in the well-developed keels of the lateral sepals. From *E. ionophlebium* it differs in habit, the leaves being much smaller and the pseudobulbs widely separated on the elongated, creeping rhizome.

COSTA RICA, southern flanks of Irazú, C. H. Lankester 461. 5000–7000 feet altitude. Sepals and petals white to cream, a violet purple median stripe on basal half. Lip white to cream with a white callus and about twelve purple stripes. Column green at the base with a purple stripe. (TYPE in Herb. Ames No. 26948.)

***Tetramicra simplex* Ames sp. nov.** Radices numerosae, valde incrassatae, plus minusve fasciculatae. (Folia verisimiliter subteretia, acuta.) Scapus strictus, erectus, plus minusve quindecimflorus. Flores in racemo laxo dispositi. Sepala lateralia elliptico-lanceolata, acuta, leviter

apiculata, septemnervia. Sepalum dorsale ellipticum, acutum, septemnervium. Petala anguste spathulata, valde obtusa vel nonnihil truncata, trinervia vel nonnihil binervia. Labellum subsimplex vel obscure trilobatum; lobis lateralibus minutis obtusis; lobo medio transverse elliptico, leviter emarginato, septemnervio. Discus prope basim columnae bicarinatus vel bicallosus. Columna crassa, superne dilatata.

Roots fleshy up to 6 cm. or more long, fasciculate, whitish in dried specimens. (Leaves wanting in the type. In specimen collected by *Palmer & Riley* 187, up to 17 cm. long, terete, 2.5 mm. in diameter, rigid, obliquely ascending, acute.) Plant about 5 dm. tall, above the leaf (at intervals of 3–4 cm.) provided with closely appressed nervose acute tubular sheaths which are about 1.5 cm. long. Raceme 16–25 cm. long, bearing fifteen or more flowers. Bracts of the inflorescence 3–6 mm. long, lanceolate, acuminate, acute, spreading. Pedicel with the ovary about 1 cm. long, slender, obliquely ascending, smooth. Lateral sepals 7 mm. long, 3 mm. wide, elliptic-lanceolate, acute, obscurely apiculate, 7-nerved. Dorsal sepal about 7 mm. long, elliptical, acute, 7-nerved. Petals 7 mm. long, 1 mm. wide above the middle, narrowly spatulate, subacute obtuse or sometimes truncate, 2–3-nerved, rather fleshy. Labellum subsimple, the lateral lobes being much reduced, 9.75 mm. long; lateral lobes .75 mm. long, 1 mm. wide, obtuse; middle lobe including the cuneate isthmus 7 mm. long, 1 cm. wide, transversely elliptical or reniform, shallowly emarginate, 7-nerved, with the outer nerves branched. Disc shortly bicarinate near the base of the column. Column 4 mm. long, dilated upward.

Tetramicra simplex is most closely related to *T. tenera* (A. Rich.) Rolfe, from which it differs in the reniform mid-lobe and in the much reduced obtuse lateral lobes of the labellum.

CUBA, Isle of Pines, near Los Indios, *Otto E. Jennings* 644, May 19, 1910. (TYPE): Pinar del Rio Province, near El Gauma in mountains, *William Palmer & J. H. Riley* 197,

March 9, 1900. Exposed hilltops under pines. (TYPE in Herb. N. Y. Bot. Gard. Flower, photograph of type and sketches in Herb. Ames No. 22113.)

Ascotainia Elmeri Ames Orch. 5 (1915) 99.

Tainia inamoena Kränzl. in Fedde Reperit. 17 (1921) 387.

A careful comparison of the types of *Ascotainia Elmeri* and *Tainia inamoena* has convinced me that they represent a single species.

Dendrobium agusanense Ames sp. nov. Caules valde elongati, dependentes, foliosi. Folia disticha, lanceolata, apice inaequaliter bilobata, coriacea, inter se satis distantia. Racemi e vagina foliorum orientes, brevissimi, biflori, floribus approximatis. Sepala lateralia valde curvata, falcato-lanceolata, subacuta, carnosa, usque ad apicem sensim angustata, mentum breve formantia. Sepalum dorsale valde elongatum, lineari-oblongum, obtusum, apice incrassatum, prope basim sensim angustatum. Petala lineari-spathulata, basi valde attenuata, obtusa. Labellum trilobatum; lobis lateralibus quam lobo medio multo minoribus, antice subquadratis; lobo medio, late ovato, acuminato, subacuto, carnoso. Discus verruculosus, ungui per medium tricarinato. Columna abbreviata in pedem producta.

An epiphytic caespitose herb 1-4 meters or more long, pendent, leafy. Leaves distichous, about 3.5 cm. apart, 1 dm. or more long, 2-2.5 cm. wide, lanceolate, unevenly bilobed at the tip, with the lobes more or less acute or obtuse. Sheaths of the leaves closely appressed, concealing the stem, minutely verruculose, about 3 cm. long. Peduncle 2-flowered, 5 mm. long, breaking through the leaf sheath, opposite the leaves, subtended by two rigid opposed erect bracts which conceal the peduncle and reach to the base of the flower-stalks. Lateral sepals 11 mm. long, 3.5 mm. wide above the base, strongly curved, falcate-lanceolate, subacute, rather fleshy, forming a distinct mentum which is 3 mm. long. Dorsal sepal 16.5 mm. long, about 3 mm. wide, linear-

oblong, obtuse, thickened at the tip, fleshy. Petals 13.5 mm. long, 2 mm. wide above the middle, linear-spatulate from a very slender and elongated base, 7-nerved, rather fleshy. Labellum 3-lobed, 7 mm. long; lateral lobes smaller than the middle one, the anterior free portion subquadrate, 1.5 mm. wide and 1.5 mm. long; middle lobe ovate acuminate, acute, much exceeding the lateral lobes about 4 mm. long, 3 mm. wide across the base. Disc minutely verruculose and papillose. Unguis tricarinate, the middle keel very much thickened, the laterals verrucose. Column short, produced into a distinct foot.

In habit similar to *D. luzonense* Lindl., but with broader leaves and a very different labellum.

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, A. D. E. Elmer 12462, August 1912. Small tufts hanging from moss-covered limbs extending over the Catangan creek-bed at 1000 feet altitude in very humid and densely shaded places. Roots fibrous, ample, greenish brown, closely attached; and thereby somewhat flattened. Stems few and quite rigid at base, 5-15 feet long, unbranched, the leaf-bearing portion subterete. Leaves thickly coriaceous, paler beneath than above, flat. Flowers in pairs from brown bracts. Floral segments green, slightly curved toward each other, petals and labellum spotted minutely with purple. (TYPE in Herb. Ames No. 13433.)

***Dendrobium pterocarpum* Ames sp. nov.** Radices fibratae, albidae, glabrae. Caules caespitosi, elongati, basi tumidi vel pseudobulbosi, uni- ad quadrifoliati (pars tumida caulis semifusiformis, in sicco flavida, valde sulcata), juniores vaginis acutis demum in fibras solutis inclusi. Folia alterna, inter se satis distantia, valde recurvata, lineari-lanceolata vel anguste oblonga, utrinque attenuata, apice breviter apiculata, vix in petiolum contracta, ascendunt, coriacea. Inflorescentia terminalis, pauciflora, ex axilla folii terminalis oriens. Racemus folio multo brevior, bractea infundibuliformi subtendenti. Bracteae flores subtendentes permagnae, ovato-lanceolatae, acutae, apice breviter conduplicatae. Ovarium pedicellatum sexalatum, pedicello gracili. Sepala

lateralia triangularia, acuta, apice conduplicata, mentum extensoriiforme elongatum formantia. Mentum ovario longius, antice medium usque clausum. Sepalum dorsale lanceolatum, valde concavum, petalis longius, acutum, breviter carinatum, apice breviter conduplicatum. Petala elliptico-lanceolata, acuminata, valde acuta, quinquenervia. Labellum simplex, a basi anguste cuneata mox dilatatum, triangulari-acutum, infra apicem triangularem rotundatum, basi mento cohaerens. Discus ecarinatus. Columna abbreviata, in pedem longum producta. Anthera minute glandulosa.

Epiphytic herb, up to 15 cm. tall. Roots fibrous, spreading, white, smooth. Stems erect, about 5 mm. thick near the base in dried specimens, attenuated upwards, concealed below when young by ample acute nervose sheaths which soon break down into straggling fibres. Leaves more or less terminal, one to four on each stem, 3.5–10 cm. long, up to 7 mm. wide, alternate, about 2 cm. apart, linear-lanceolate, acute, narrowed at the base, shortly petioled, coriaceous, strongly recurved. Inflorescence terminal in the axil of the uppermost leaf, about 3 cm. long, few-flowered. Raceme much shorter than the subtending leaf, conspicuously bracteose, subtended by an infundibuliform bract which is 8 mm. long. Bracts of the raceme up to 1.5 cm. long, ovate-lanceolate, heavily nerved, acute, with the apex shortly conduplicate. Ovary long-pedicellate, dilated upward, conspicuously 6-winged, including the pedicel 1.6 cm. long. Lateral sepals forming a mentum, — which is 1.3 cm. long and 2.5 mm. in diameter, — 9 mm. long, 4 mm. wide near the base of the column, triangular, acute, with the apex shortly conduplicate-carinate. Dorsal sepal 9 mm. long, lanceolate, acute, strongly concave, with the apex shortly carinate. Petals 7.5 mm. long, 3 mm. wide, elliptic-lanceolate or somewhat rhombic-lanceolate, acute, somewhat thickened at the tip, minutely glandular on the margin and outer surface, 5-nerved. Labellum about 1.5 cm. long to the point of attachment, 2 mm. wide near the base, 5 mm. wide near the tip, gradually widened upward from a narrowly cuneate base, rounded near the tip, where it is abruptly narrowed into

a triangular acute termination, which is 3 mm. long and 2 mm. wide. Column 3.5 mm. long, produced into a slender, elongated foot. Anther papillose in front.

There are no near allies of this species in the Philippines.

PHILIPPINES, Mindanao, Davao District, Todaya, Mount Apo, A. D. E. Elmer 11528, August 1909. Erect tuft upon moss-covered limbs of trees in dense woods of low moist soil at 6250 feet on Mount Apo; roots whitish; pseudobulbs not hard, green, covered with shredded sheaths; stem erect, green, terete; leaves thickly coriaceous, shiny dark green above, much lighter green beneath, flat, but strongly recurved; inflorescence from the uppermost leaf-axil, 3-flowered, the subtending bracts green, the suberect, odorless flowers very pale white throughout. "Salamiog." (TYPE in Herb. Ames No. 26743.)

Bulbophyllum arrectum Kränzl. in Fedde Repert. 17 (1921) 384.

The type of this species consists of a single inflorescence. In the dried condition it is blackish and brittle. The general aspect of the subumbellate flowers suggests very closely *B. stellatum* Ames.

Bulbophyllum colubrimodum Ames sp. nov. Rhizoma longe repens, vaginis abbreviatis albidis vestitum. Pseudobulbi plus minusve approximati, obpyriformes, in sicco valde rugosi, erecti vel oblique ascendentes, monophylli. Folium variabile, plerumque elliptico-lanceolatum interdum oblongo-lanceolatum, apiculatum, valde coriaceum, in petiolum brevem contractum. Scapus gracilis, folium superans, uniflorus. Ovarium breviter pedicellatum, bractea infundibuliformi infra pedicellum. Sepala lateralialia longe triangularia, acutissima, trinervia, mentum breve formantia. Sepalum dorsale simile, basi concaviusculum, trinervium. Petala oblonga, utrinque angustata, uninervia, acuta, membranacea, sepalis multo breviora. Labellum complicatum, supra medium valde deflexum, usque ad medium tricarinatum, carinis lateralibus prope basim labelli divergentibus, carina media prope basim labelli protuberanti; pars apicalis

labelli valde deflexa, elliptica, conduplicata, subtus earina carnosa instructa, apice conspieue apiculata. Columna brevis, biuspidata.

Rhizome elongated, clothed with abbreviated whitish sheaths, rooting beneath the pseudobulbs. Roots spreading, smooth. Pseudobulbs about 7 mm. long, about 3 mm. in diameter near the base, obpyriform, yellowish and much wrinkled when dry, erect or ascending, about 5 mm. apart on the rhizome, monophyllous. Leaf 22-32 mm. long, 5-10 mm. wide near the middle, apparently very variable, elliptic-lanceolate or oblong-lanceolate, coriaceous, apiculate, shortly petiolate. Petiole 2 mm. long, slender. Scapes arising from the base of the pseudobulbs or from the rhizome between the pseudobulbs, 4-5 cm. long, with a tubular bract at the base, ascending, exceeding the leaf, bearing a single green and purple flower and provided beneath the pedicellate ovary with a short, infundibuliform bract. Pedicel and ovary 4 mm. long. Lateral sepals 12.5-15 mm. long, about 2 mm. wide near the base, tapering gradually to the acute tip, 3-nerved, narrowly triangular-lanceolate, united at base where they form a short obtuse mentum. Menthum 2 mm. long. Dorsal sepal 11.5-15 mm. long, similar to the laterals, somewhat concave at base, very slender above the middle, 3-nerved. Petals about 5 mm. long, 1 mm. wide, oblong, acute, slightly narrowed toward the base, 1-nerved, membranaceous, smooth. Labellum 4 mm. long, shortly and narrowly unguiculate, sharply deflexed at about the middle, basal half narrowed, tricarinate on the upper surface, apical half elliptical-apiculate when spread out, thickened along the middle on the under surface, eucullate at the apex. Keels more or less fleshy, the laterals intramarginal, divergent at the base of the labellum, the central keel shorter and broader than the lateral ones, somewhat cleft at the protuberant base, very minutely glandulose. Column abbreviated, prolonged at base into a distinct foot, produced at the apex into two triangular steldia. Foot of the column dilated at the point where the labellum is inserted.

The labellum in its sharply deflexed apical half suggests the lip of *Bulbophyllum lipense* Ames. In the dried material examined the petals are purplish, the sepals yellowish or yellow-green. The labellum appears to have been purplish and yellow. The specific name alludes to the peculiar apical portion of the labellum which, — in certain positions, — resembles the head of a snake about to strike. [Fig. 12.]

PHILIPPINES, Leyte, C. A. Wenzel 0698, November 22, 1914. Epiphyte in forest. Sepals green and purple: petals green and purple: lip green and purple. 600 meters altitude. (TYPE in Herb. Ames No. 26731.)

***Bulbophyllum echinophilum* Kränzl.** in Fedde Repert. 17 (1921) 385.

Through the kindness of Dr. Kränzl I have been able to examine the type specimen of this species which in the structure of the labellum suggests the West African *B. Calamaria* Lindl. In the original description prepared from a specimen cultivated in the botanic garden at München-Nymphenburg the native country of *B. echinophilum* is said to be the Philippine Islands. As the affinities of the plant are distinctly African, it would seem wise to await confirmation of the ascribed habitat before including *B. echinophilum* in the Philippine flora. The frequency with which labels become transferred from one plant to another in botanic gardens stimulates skepticism when species are referred to a geographical area in which they lack affinities or close allies.

***Bulbophyllum exquisitum* Ames nom. nov.**

Bulbophyllum MaeGregorii Ames in Phil. Journ. Sci. C. Bot. 7 (1912) 137, non Schltr. in Fedde Repert. 10 (1911) 252.

***Bulbophyllum filicoides* Ames sp. nov.** Herba epiphytica, pendula. Rhizoma gracile elongatum. Pseudobulbi parvuli, in rhizomate seriati, juniores vaginis marcescentibus mox in fragmenta fibrosa solutis tecti, inter se

satis distantes, monophylli. Folia lanceolata, acuminata, acuta, apice obscure mucronulata, oblique descendunt, coriacea. Pedunculus ascendens, cum racemo folium superans, e basi pseudobulbi oriens, infra racemum bi- vel tribracteatus, bracteis in sicco, diaphanis, infundibuliformibus. Bracteae racemi flores subtendentes anguste lanceolatae, ovarium excedentes. Racemus laxus, plus minusve quindecimflorus. Sepala lateralalia basi valde concava, triangularia, in caudam spongiosam terminantia, mentum obtusum formantia. Sepalum dorsale anguste lanceolatum, basi concavum, in caudam spongiosam productum. Petala sepalis multo breviora, lanceolata, apice leviter spongiosa. Labellum simplex, e pede columnae oriens, demum valde deflexum, ligulato-lanceolatum, obtusum, supra per medium leviter sulcatum, subtus carinatum. Columna valde abbreviata, in pedem elongatum producta.

Roots filiform, elongated, branching. Rhizome pendent, 26 cm. long more or less, slender, covered with yellowish marcescent sheaths which (as they mature) break up into coarse fibres. Pseudobulbs about 1.5 mm. long, hardly attenuated upward, monophyllous, about 1 cm. apart, at first entirely concealed by the marcescent sheaths. Leaf 3.5-4 cm. long, up to 11 mm. wide below the middle, lanceolate, acuminate, acute, obscurely mucronulate at the apex, coriaceous, contracted at base into a short, obscure, sulcate petiole. Peduncle with the raceme 4-5 cm. long, bearing from two to three infundibuliform bracts below the raceme, slender, ascending. Raceme about 2.5 cm. long, loosely flowered. Flowers about fifteen, 6 mm. long, yellowish, subtended by lanceolate scarious bracts which exceed the shortly pedicellate ovaries. Lateral sepals 6 mm. long, including the obtuse mentum 2.5 mm. wide at the base, abruptly contracted to form a spongy tail-like tip, concave at the wide base, porrect. Dorsal sepal 6 mm. long, narrowly lanceolate, terminating in a spongy tail. Mentum 2 mm. long. Petals hardly 2 mm. long, 1 mm. wide, lanceolate, apex somewhat spongy, acute. Labellum 3.5 mm. long, simple, narrowly lanceolate, about 1 mm. wide, strongly curved or arcuate, grooved along the middle

Fig. 11

BULBOPHYLLUM

filicoides
Ames



on the upper side, lightly carinate beneath, ecallose. Column 1 mm. long, bibrachiate at the summit, produced into an elongated foot which is 2 mm. long with a swelling near the base.

Vegetatively similar to *B. perpendiculare* Schltr., from which it differs in having longer racemes with more numerous flowers and different petals. In general habit similar to the Bornean *Bulbophyllum rhizomatosum* Ames & Schweinf., but with different flowers. [Fig. 11.]

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, A. D. E. Elmer 14200, October 1912. Hanging from the nether side of large tree trunks covered with mosses in humid forests some 500 feet above the lagoon region or at 5500 feet altitude; stem very thread-like, especially toward the base, covered with yellowish marcescent sheaths; leaves alternating, descending or pendent, coriaceous, flat, paler green beneath, at the base with a small green pseudobulb; peduncle arising from the base of the pseudobulb, ascending, fibrous, pale green; flowers odorless, descending, the segmented portion yellow, the other basal portion watery white; "Gomacazgay" in Manabo. (TYPE in Herb. Ames No. 13443.)

***Bulbophyllum glandulosum* Ames sp. nov.** Rhizoma valde elongatum, repens, gracile. Pseudobulbi inter se distantes, obpyriformes, in sicco valde rugosi, monophylli. Folium ellipticum, subaeutum, coriaceum, breviter petiolatum, seapo multo brevius. Scapus uniflorus, e basi pseudobulbi vel e rhizomate in medio inter pseudobulbos ortus, filiformis. Flores verisimiliter atropurpurei. Sepala lanceolata, aequata, trinervia. Petala infra medium oblonga, supra medium abrupte angustata, in caudam brevem glandulosam producta, uninervia. Labellum trilobatum; lobis lateralibus antice rotundatis, usque ad medium labelli attingentibus; lobo medio oblongo, obtuso, incrassato, valde glanduloso. Discus carina complanata gnomoniformi ornatus. Columna brevis, antice bicuspidata.

Rhizome elongated, 28 cm. or more long, slender, about 1 mm. thick in dried specimens, bearing pseudobulbs

at intervals of about 1 cm. Pseudobulbs 5 mm. long, obpyriform, about 3 mm. thick at the base, much wrinkled when dry, yellowish or greenish, monophyllous. Leaf 1-2.5 cm. long, 4-7 mm. wide, elliptical or elliptic-lanceolate, rounded at the base and passing into a short petiole, acute, coriaceous. Petiole 2 mm. long, slender. Scapes up to 4.5 cm. long, arising from the base of the pseudobulbs or from the rhizome between the pseudobulbs, filiform, weak, 1-flowered. Flowers dark purple when dry, described as being black by the collectors. Pedicel and ovary about 2.5 mm. long, subtended by an abbreviated tubular bract. Lateral sepals 4.5-5 mm. long, about 1.5 mm. wide near the base, triangular-lanceolate, acuminate, acute, 3-nerved, the nerves closed. Dorsal sepal 5 mm. long, lanceolate, similar to the laterals, 3-nerved, minutely glandular on the upper surface near the tip. Petals about 3 mm. long, scarcely 1 mm. wide below the middle, above the middle suddenly contracted into a caudate glandular termination, 1-nerved. Labellum 3-lobed, about 2 mm. long, 1 mm. wide across the expanded lateral lobes, obscurely cordate at the base; lateral lobes extending to about the middle of the labellum, rounded in front, erect or nearly so when in natural position, diaphanous, 1 mm. long; middle lobe about 1 mm. long, hardly .5 mm. wide, rather fleshy, copiously glandulose. Disc with a gnomon-like keel along the middle which extends from near the base of the labellum to about the centre of the mid-lobe. Column short, produced into a distinct foot, with a stolidium on each side in front at the summit.

From *Bulbophyllum peramoenum* Ames, which is a closely allied species, *B. glandulosum* differs conspicuously in having dissimilar petals which are distinctly and profusely glandulose above the middle. From *B. Toppingii* Ames, another closely allied species, it is separable by its conspicuously glandular petals and labellum and in its dark purple flowers. [Fig. 12.]

PHILIPPINES, Luzon, Tayabas Province, Mount Binuang, M. Ramos & G. Edaña, Bureau of Science 28787, May 9, 1917. Epiphyte. 1000 meters. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26730.)

Bulbophyllum Levanae Ames Orch. 5 (1915) 178.

In recent studies of Philippine orchids it has become apparent that *B. nymphopolitanum* Kränzl. and *B. trigonosepalum* Kränzl. are near allies of *B. Levanae*, and sufficiently close to it to arouse suspicion that they represent the same species. Dr. Kränzlin kindly loaned to me the types of *B. nymphopolitanum* and *B. trigonosepalum*. These consist of specimens obtained in the Philippine Islands by A. Loher. *B. nymphopolitanum* is referred doubtfully to the Philippines in the original description published in 1916, but I think there can be only slight doubt as to its origin, as it is a close match for *B. Levanae* from Leyte, differing from it chiefly in having somewhat larger flowers. *B. trigonosepalum* is characterized by having larger flowers than either *B. Levanae* or *B. nymphopolitanum*, but structurally is very similar to them. In all of the specimens examined the labellum possesses the peculiar oblong, lobe-like appendages which are not found in any other species of the genus heretofore reported from the Philippines. These appendages of the labellum are basally situated near the point of insertion on the foot of the column. *B. nymphopolitanum*, — if my conclusions are justified, — should be referred to *B. Levanae*. As for *B. trigonosepalum*, it may prove to deserve a similar fate, but until more material than I have been able to secure has been examined it may be well to regard it as a close ally of *B. Levanae*, perhaps as a variety of that species.

Bulbophyllum luzonense Ames in Philip. Journ. Sci. C. Bot. 7 (1912) 141.

Bulbophyllum syllectum Kränzl. in Fedde Repert. 17 (1921) 383.

In habit and flower-structure *B. luzonense* and *B. syllectum* are so similar that I have been unable to find satisfactory distinguishing characters that will separate them clearly. *B. syllectum* was described from specimens collected in the Philippines by A. Loher. The type consists of specimens that were cultivated in the botanic garden at München-Nymphenburg.

Bulbophyllum marcidum *Ames sp. nov.* Radices glabrae. Rhizoma repens. Pseudobulbi dense congesti, in catenam aggregati, monophylli. Folium ellipticum vel oblongo-ellipticum, acutum vel obtusum, coriaceum, in petiolum brevem contractum, scapo filiformi multo brevius. Scapus erectus, uniflorus. Flos flavidus. Sepala lateralía obtuse triangularia, trinervia, mentum obtusum formantia. Sepalum dorsale oblongo-ligulatum, obtusum, trinervium. Petala sepalis multo breviora, oblonga, uninervia, apice rotundata. Labellum obscure trilobatum, lamina labelli expansa in circuitu subsagittata; lobis lateralibus erectis, obtusis; lobo medio oblongo, convexo, obtuso, dense et breviter glanduloso, margine valde deflexo vel revoluto. Columna brevis, in pedem elongatum producta, apice bicuspidata.

Roots smooth, coarse, whitish when dry. Rhizome creeping, elongated. Pseudobulbs 3 mm. long, about 1 mm. in diameter in dried specimens, procumbent on the slender rhizome, contiguous, with the ascending apex bearing a single leaf, the mature pseudobulbs subtended by the fibrous remains of loosely appressed sheaths. Leaf 5-10 mm. long, 3.5 mm. wide, elliptical or oblong-elliptical, obtuse or acute, coriaceous, contracted into a short petiole. Scape arising from the base of the pseudobulbs, 2-3 cm. long, filiform, erect, exceeding the leaf, 1-flowered. Flower yellow. Ovary with the pedicel 7 mm. long to the subtending tubular bract, smooth. Lateral sepals 3.5 mm. long, 1 mm. wide near the middle, tapering very gradually to a subobtuse tip, 3-nerved, smooth on the margin, forming a mentum 1.5 mm. long. Dorsal sepal 4 mm. long, about 1 mm. wide near the middle, oblong-ligulate, obtuse or subacute, 3-nerved, smooth. Petals 1.5 mm. long, hardly 1 mm. wide, oblong, obtuse, 1-nerved. Labellum 2.75 mm. long, obscurely 3-lobed, with the lateral lobes erect, obtuse, 1 mm. long and with the terminal lobe narrowly oblong, obtuse, 1.5 mm. long, its margin strongly revolute, its upper surface rounded, minutely and densely glandulose; when the lateral lobes are spread out the outline of the labellum is obtusely subsagittate. Column about 1 mm. long, continued at the

BULBOPHYLLUM *glandulosum* Ames



B. marcidum Ames



Fig. 12

B. colubrimodum Ames

base into a distinct foot to which the labellum is loosely attached. Stelidia of the column, one on each side at the summit, exceeding the anther.

The habit of *Bulbophyllum marcidum* suggests such species as *B. mindorense* Ames, *B. pleurothalloides* Ames and *B. exquisitum* Ames. From *B. pleurothalloides* it differs in having a glandulose labellum, obtuse petals, and in having the ovary far distant from the subtending bract. From *B. mindorense* it is separable in having smooth sepals that are not at all glandular on the margin. From *B. exquisitum* it is very distinct in the size of the flowers and in the very different labellum and smooth ovary. The apical portion or mid-lobe of the labellum is characterized by a strongly deflexed slightly revolute margin; seen from the side it has the appearance of being fleshy. The upper surface is strongly convex and closely studded with minute gland-like prismatic cells. The apex is blunt with the margin turned sharply downward. [Fig. 12.]

PHILIPPINES, Mindanao, Bukidnon Subprovince, Mount Lipa, *M. Ramos & G. Edaña*, *Bureau of Science* 38573, July 8, 1920. On roots of trees in forest. Flowers yellow. 4900 feet altitude. (TYPE in Herb. Ames No. 26737.)

***Bulbophyllum pampangense* Ames sp. nov.** Rhizoma longe repens, plus minusve flexuosum, infra pseudobulbos radicans. Pseudobulbi inter se satis distantes, obpyriformes, in sicco profunde sulcati, monophylli. Folia elliptica, breviter petiolata, coriacea. Scapi e basi pseudobulbi vel e rhizomate in medio inter pseudobulbos orti, folium aequantes vel superantes, filiformes, paucibracteati. Bractea infra florem infundibuliformis. Sepala lateralialia longe triangulari-lanceolata, valde acuta, verisimiliter patentia, trinervia. Sepalum dorsale simile. Petala lanceolata, acuminata, acuta, uninervia, membranacea. Labellum quam sepala lateralialia multo brevius, infra apicem valde constrictum, obtusum, in circuitu anguste obovatum, breviter unguiculatum, per medium labelli carina longitudinali gnomoni solari simili antice explanata ornatum. Columna brevis.

Rhizome elongated, somewhat flexuose, hardly 1 mm. thick in dried specimens, smooth. Roots fibrous, produced from the rhizome beneath the distant pseudobulbs, smooth. Pseudobulbs about 5 mm. tall, 5 mm. thick at the base in dried specimens, tapering gradually toward the summit, 1-1.2 cm. apart, plurisulcate when dry, monophyllous. Leaves shortly petiolate, 1.5-1.9 cm. long, 5-8 mm. wide, elliptical, acute, shorter than the slender scapes, mid-nerve somewhat prominent. Scapes filiform, erect, up to 3 cm. long, produced from beneath the pseudobulbs and from the rhizome midway between the pseudobulbs, paucibracteate, with an infundibuliform sheath subtending the solitary flower. Lateral sepals 7 mm. long, 1.75 mm. wide near the middle, narrowly triangular-lanceolate, acute, 3-nerved, membranaceous. Dorsal sepal 6 mm. long, about 2 mm. wide, similar to the laterals. Petals about 3 mm. long, 1 mm. wide below the middle, lanceolate, acute, 1-nerved. Labellum nearly 2 mm. long, 1 mm. wide above the middle, narrowly obovate in outline, conspicuously constricted .75 mm. from the blunt apex, contracted at base into a wide claw, concave-sulcate below the middle with a gnomon-like keel near the base which becomes dorso-ventrally flattened in front and as a thickened lamella extends to the apex of the labellum. Column short with an elongated stelidium on each side in front at the summit.

The vegetative parts resemble *Bulbophyllum alagense* Ames, but the slender scapes are much longer than in that species, and the structure of the flower is very different. *B. peramoenum* Ames and *B. Toppingii* Ames are allied species which differ from *B. pampangense* in the narrower leaves, shorter sepals and dissimilar petals.

PHILIPPINES, Luzon, Pampanga Province, Mount Pin-gatubo, E. D. Merrill 11214, December 1918. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26301.)

***Bulbophyllum subaequale* Ames sp. nov.** Radices copiosae, fibratae. Pseudobulbi plus minusve caespitosi, subobsoleti, breviter cylindranei, monophylli. Folium valde coriaceum, longipetiolatum, anguste oblongo-ellipticum, ob-

tusum, scapo subaequale, nervo medio subtus prominenti. Scapus prope basim pseudobulbi oriens, erectus, plus minusve decemflorus, folium aequans vel nonnihil longior. Racemus elongatus, bracteis triangulari-lanceolatis, patentibus, acutis. Flores subalbi, inter se satis distantes. Pedicellus cum ovario racemi bracteas subaequans. Sepala lateralibus mentum obtusum formantia, triangulari-ovata, apice leviter incrassata, acuta, trinervia. Sepalum dorsale oblongum, trinervium, apice leviter incrassatum, acutum. Petala spathulata, acuta, incrassata, binervia, supra medium minute papillosa. Labellum simplex, ecallosum, linguiforme, valde obtusum, conspicue trinervium, glabrum. Columna valida, antice breviter triangulari-bidentata, postice in lobum rotundatum terminans.

Epiphytic herb. Roots numerous, fibrous, smooth. Pseudobulbs subobsolete, approximate, shortly cylindrical, hardly 2 mm. tall, about 2.5 mm. in diameter, yellowish when dry, monophyllous. Leaf with the petiole 10–16 cm. long, 14–21 mm. wide, very coriaceous, narrowly elliptic-oblong, obtuse, with the lamina 7.5–11 cm. long, brownish when dry. Petiole 3–5 cm. long, slender. Scape arising from the base of a pseudobulb, equaling or slightly exceeding the leaf, including the raceme about 12 cm. long, sheathed below by several approximate, tubular, loosely appressed bracts. Raceme 4–6 cm. long, about 10-flowered, slender. Bracts of the raceme triangular-lanceolate, 2–5 mm. apart, acute, scarious when dry, 3.5 mm. long, spreading. Pedicel with the ovary 3.75 mm. long. Flowers whitish tinged with yellow, rather fleshy. Lateral sepals 6 mm. long, 3 mm. wide near the middle, triangular-ovate, acute, thickened at the tip, 3-nerved, forming a distinct mentum. Mentum about 3 mm. long. Dorsal sepal 6 mm. long, 2.5 mm. wide near the middle, oblong, very slightly narrowed toward the base, acute, with the apex somewhat thickened, 3-nerved. Petals 3.5 mm. long, 1.5 mm. wide above the middle, spatulate, subacute, much thickened, densely but inconspicuously papillose from the tip to about the middle, otherwise smooth, mid-nerve conspicuous, with a supplementary nerve between it and the posterior margin of the petal. La-

bellum 4 mm. long, 2 mm. wide, simple, but with the basal margin more or less erect, linguiform, very obtuse, conspicuously 3-nerved, smooth, ecallose. Column (above the foot) 2.5 mm. long, stout, with a triangular tooth on each side in front at the summit, and with a rounded terminal membrane behind the anther.

Bulbophyllum subaequale is a close ally of *B. dasypetalum* Rolfe, from which species it differs chiefly in the foliage and in the shape of the petals.

PHILIPPINES, Luzon, Rizal Province, Mount Susongdalaga, *M. Ramos & G. Edaña, Bureau of Science* 29296, August 5, 1917. 300 meters altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26727.)

Robiquetia pantherina (*Kränzl.*) *Ames comb. nov.*
Saccolabium pantherinum *Kränzl.* in *Fedde Repert.* 17 (1921) 391.

Cleisostoma spatulatum *Bl.* apud *Naves Novis.* App. (1882) 238.

Saccolabium densiflorum *Lindl.* in *Bot. Rec.* (1838) Misc. 56, *quoad Philip.*, non *Lindl.* in *Wall. Cat.*; *Reichb. f.* in *Walp. Ann.* 6 (1864) 885, *quoad Philip.*; *Naves Novis.* App. (1882) 241.

Robiquetia spathulata *Ames Orch.* 5 (1915) 237, non *J. J. Sm.*

In the brief note appended to the description of *Saccolabium pantherinum*, Kränzlin described the species as being without any trace of a scale or special structure in the throat of the labellum. In my studies of a flower of the type, I found a well-developed scale ascending obliquely from the anterior wall of the sac and a forcipate scale on the posterior wall. If for separation of *Saccolabium pantherinum* from *Robiquetia spathulata*, Kränzlin relied on the absence of the scales above mentioned, it would seem that he was deceived by the flower, which he examined, being imperfect.

Robiquetia pantherina is closely related to *Robiquetia spathulata* *J. J. Sm.* It differs from that species in having the scale on the anterior wall of the sac obliquely ascending and hardly thickened, and in the sepals and petals having

NEW OR NOTEWORTHY ORCHIDS

conspicuous maculations. Other differences are found in the contour of the labellum and in the somewhat differently shaped lateral lobes.

PHILIPPINES, rare.

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PUBLISHED NOVEMBER 3, 1923